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ORIGINAL COMMUNICATIONS.

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RADIOGRAPHY OF THE NASAL SINUSES.*†

DR. DOUGLAS MACFARLAN, Philadelphia.

Speaking generally, from a rhinologist's standpoint, results obtained from radiography of the nasal sinuses are so irregular and non-dependable that something more than a casual inquiry into this subject would appear valuable. The fact is, that many cases with beautiful clinical signs and symptoms when sent to be x-rayed return with plates so poor that it seems impossible to make a diagnosis from them. And yet diagnoses are hazarded and often radical operative work hangs on such decisions. To any one who will take the bother to look up the plates and the case histories in any of the larger hospitals or in private practices where even more care is taken, there cannot but come the conviction that there is a great discrepancy between the clinical findings and the evident value of the plates. The plates are usually notoriously poor and good plates are exceptional. It is especially difficult to get good x-ray findings from the sphenoid, the sinus that we need the most help upon from the roentgenologist. At the present time, the value of clinical appearances and the results of transillumination are far out of proportion to the value of the x-ray, and yet with a little care and attention the latter can be made a most useful aid in diagnosis.

In this country Caldwell of New York first took up the subject and in a paper read before the Triological Society in 1908 epitomized in a clear and frank way the problems to be met. "An important feature of the diagnostic use of the x-rays in the nasal tract is that

*Read at the meeting of the College of Physicians, April, 1914.
†Radiograms by Dr. Walter C. Barker.

get this the head is placed so that a line from the external auditory meatus to the pupil is perpendicular to the plate resting on the brow and nose. The median ray from the tube passes parallel to this line through the skull.

The position is a good one for taking both frontals and sphenoids and has as its only objection the tendency to bring the occiput, base and sphenoids all in the same region unless care is observed.

The frontals appear above and should show up well; the sphenoids are brought to the inner sides of the orbits, and with the ethmoids are often superimposed on the lowest part of the frontals. The antra, thrown down out of the way, are confused with the lower part of the orbit, more strictly speaking the orbits are thrown ahead of the antra. The typical dome-shape of the sphenoid is usually seen, the lower border of these cells showing as a straight horizontal line and the roof a dome-like half circle. The line of the occiput comes through the upper third of the orbit.

The chin position: The chin position with the head, face down, chin and the tip of the nose resting on the plate is excellent for pictures of the frontals, since it throws these cells high up free of everything. The antra show up well but the sphenoids are masked by their appearance in the turbinate region. The posterior ethmoids are usually superimposed on the sphenoids but the anterior cells will often be seen in these plates. The views of the septum and the turbinates are good. The base of the skull is low and on a line with the articulation of the teeth.

The extended chin position. Plate 3: The patient is prone with neck stretched out and chin thrown forward to its fullest extent. The point of the chin is elevated by slipping under it a shallow box or two and on top of these the plate rests. A line between the external auditory meatus and the pupil is horizontal to the plate, the tube is above, its median ray passing perpendicular to the plate and just anterior to the external auditory meatus. The position is ideal for the sphenoids, throwing them clear of everything and through the soft palate and down between the jaws. An excellent opportunity is had to compare the two cells as to size and shadow, and in most fair plates, the septum between the cells is plainly seen. The frontals show up well, for but little bone is passed through Other sinuses show up disadvantageously. Care must be taken to get the fullest extension, for otherwise the sphenoids are thrown into the heavy shadow of the jaws.

The eye position has been suggested by Pfahler to show up the sphenoids; the face is prone and inclined to one side so that the rim of the orbit rests on the plate. The sphenoids are projected

through the orbits and show up somewhat obliquely superimposed. The effect is somewhat confusing.

Lateral views, Plate 5: Lateral views are of chief value in giving an idea of sinus depth and in showing sella changes. The pairs of cells are so superimposed as to make differentiation between

Figure 2. Chin position.

right and left side difficult. Even the slight obliquity which you usually get will make possible the outlining of the individual cells but as the bulk of their bodies overlies, pathological differences cannot be made out. Since few of these views are distinctly oblique. there is often a great confusion of lines particularly in the sphenoid region; the location of the cleinoid processes is particularly hard. Some help will be had out of this difficulty by observing the rami

Figure 3. Extended chin position.

of the jaws and from them get an idea of the obliquity and its direction.

Occasionally there arises much difficulty in deciding upon which side of the skull certain objects are, for instance the light shadows of bone absorption, or the root or stump of a tooth. The study of

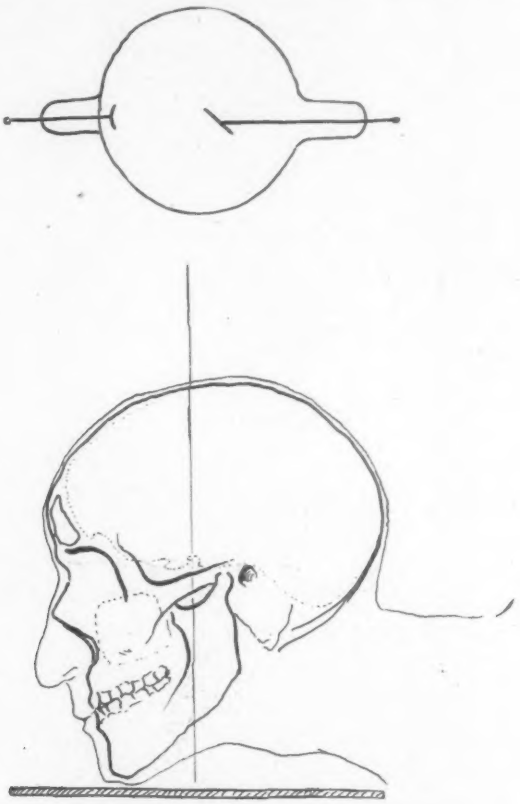

Figure 4. Diagram of extended chin position.

a number of plates taken in a variety of positions carefully comparing and observing positions and directions will usually give the solution. The use of the stereopticon in looking at these lateral plates gives the most remarkable perspective, the cleinoids, sella and the sinuses stand out at times as though you were looking at the actual skull. Dr. Bowen, of the Pennsylvania Hospital, has an

excellent scheme of getting two stereopticon views with three plates, with one vertical and two lateral exposures.

In these lateral plates the depth and height of the frontals are

Figure 5. Lateral view. Small bead of bismuth remaining in sphenoid after injection two weeks previous. Note size of sphenoid, depth of frontals and square appearance of antrum.

well seen, but for the expanse of these cells the postero-anterior view is best. The bean-shaped appearance of the sphenoids is characteristic, the roof of these cells or the floor of the sella in most

plates shows up as very thin. The ethmoids if at any time distinguishable, are occasionally sharply defined in clear, well-exposed plates. The antra look like two oblongs, very different from the flat triangle or cone seen from the front. The mastoid cells, mandibular articulation and the hyoid bone often show well.

So much then for positions; the conclusions to be made are that certain positions are most suitable for certain sinuses. It is, however, unreasonable to expect a diagnosis from one or two plates; numerous plates should be taken in any case. Little difficulty should be had in getting good frontal and antrum pictures. Radiograms of the latter, the antra, are, however, of secondary importance since other means of establishing diagnosis are so convenient.

The frontals show up best in an extreme brow position; ethmoids are always difficult of diagnosis, but lateral plates will show their shadow best, they being in these views only superimposed one on other, that is one side on another.

Sphenoids had best be taken in all the positions and conclusions reached from all the plates. The extended chin position seems most ideal, and shows up what the other plates will not, the relations between the two cells.

It is well to recall, in interpreting shadows seen in sinuses, the facts first brought out by Caldwell. Radiograms of specimens of pus and exudates from various sources show that their opacity to x-rays is practically the same as that of normal salt solution or of pure water. He proved this by taking simultaneous radiographs of the various fluids in thin celluloid dishes. Working with dry and moist specimens, he showed the marked difference in shadows due to the moisture. The injection of the sinuses of cadavers gave similar conclusions. We can realize from this that persistence of the shadows in patients whose symptoms have subsided is of less grave significance than we once supposed. It may be due to a mere chronically thickened membrane or from the collection of thin mucus. Such persistence of shadows is often seen in transilluminations of the antrum where an infection has been of long standing, where good drainage has been established, and the case has apparently cleared up.

In this irregular way, then, I submit the subject from a nose and throat standpoint, believing that a better familiarity with x-ray sinus work and its problems will lead to a helpful co-operation that will give better results in the field of diagnosis. A better knowledge of the correct positions and correct exposures will certainly give us better plates.

1805 Chestnut Street.

IMPROVED METHOD FOR REMOVING THE POSTERIOR TIP OF THE INFERIOR TURBINATE.*

DR. MAX LUBMAN, New York City.

To remove the posterior tip of the inferior turbinate with the now prevalent methods is quite a difficult procedure even in skillful hands. The chief reason is that the wire loop of the snare runs parallel to the bone and the geometrical law "that two lines running parallel to each other can never cross" holds true even in the nose. In order to get the wire loop at an angle with the bone, the following methods have to be resorted to. The snare is passed directly backward along the floor of the nose, and when the end of the wire loop has reached the pharynx, the snare canula is directed back-

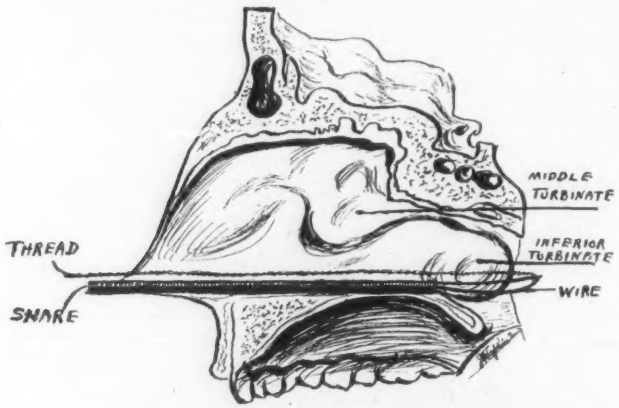

Figure 1. Wire on floor of the nose with thread attached.

wards and slightly toward the median line of the pharynx until it, too, reaches the pharyngeal wall. This bends the wire loop at an angle towards the posterior tip of the inferior turbinate. The instrument is now withdrawn until the loop encircles the hypertrophy; the snare is then gradually tightened until the wire loop slowly excises the diseased mass. This method is objectionable because the bending of the wire loop upon the patient's pharynx will undoubtedly cause pain, and may also injure the mucous membrane of the pharynx. It is also unpracticable, because it cannot always be relied upon, as a spur or a hypertrophied middle turbinate is likely not to allow the wire loop to pass in its original bent form, but will straighten it out more or less.

Another method often used is that of posterior rhinoscopy. The patient is instructed to depress the tongue; the surgeon manipulates the

*Presented at the Clinical Society of Har Moriah Hospital, April 6, 1914.

snare with one hand and observes its movements by means of a mirror which he holds in the other hand. There is no advantage in this method; the disadvantages, however, are very evident, not many a patient can tolerate or co-ordinate enough to depress the tongue, allow the manipulation of a snare in his nose and a mirror in his throat which requires nasal breathing to make posterior rhinoscopy successful. These handicaps make the success of the surgeon difficult and improbable. I wish, therefore, to offer a very simple improvement which I find both effective and easy to manipulate. To the ordinary snare I tie a thread by means of a double sailor-knot which keeps it securely in the center of the loop. It is well to use a contrasting color of blue or black in order to make the presence of the thread easily detectible. I then introduce

Figure 2. Pulling the thread bends the wire and encircles the turbinate mass.

the snare along the floor of the nose slightly further than the tip of the inferior turbinate; the thread should be directed to the septal side; I then pull the thread with left hand. This act will bend the wire loop at right angles to the tip, thereby enabling the loop to encircle the hypertrophied mass. If the floor is very narrow, I pass the snare parallel to the septum but direct the thread to the outer wall; by pulling upon the thread outwards it will encircle the mass laterally. You can ascertain whether the loop is engaged around the mass to be removed by trying to pull the snare forwards. On finding that the loop is engaged tighten the snare and the mass is excised. One of the advantages of this method is that by means of the thread the surgeon can actually regulate the size of the mass to be removed.

78 East Fourth Street.

PHYSIOLOGIC AND PATHOLOGIC RELATIONS OF THE EYE AND ACCESSORY SINUSES OF THE NOSE.*

DR. C. B. WYLIE, Morgantown, W. Va.

After selecting this subject which has been of considerable interest to me recently, I began looking up the literature to ascertain what other men had said on it in order to make comparisons, and was soon brought to a realization of the fact that everything I could possibly say has already been said by a number of very eminent men, so that I fear what I may present on this subject will be more or less a repetition of what has already been said, the effect of which will carry much more weight than anything which I might say. However, after giving a brief anatomical description of the relationship, both of the osseous and nervous anatomy of the eye to the accessory sinus of the nose, I shall attempt to describe a few interesting cases which I have had in my practice during the last year.

In order that we may have a comprehensive idea of the relationship existing between the eye and the accessory sinuses of the nose it is necessary to have a fair anatomical knowledge, not only of the osseous parts but of the sensory nerve distribution as well. Without this, an intelligent appreciation of the nervous and pathological reflex symptoms would be difficult of interpretation.

With the greater portion of the floor of the orbital cavity in close proximity to the maxillary sinuses, the internal lateral wall to the ethmoidal and sphenoidal sinus, and the superior plate anteriorally to the frontal sinus, we can readily appreciate the close anatomical relationship existing between these parts. While as a rule, a thin, bony wall separates the sinuses from the orbit, it is not infrequent that we find dehiscences of the bone which leave only mucous membrane dividing them.

The nervous anatomy can best be understood by briefly tracing the sensory branches of the fifth nerve from the Gasserian ganglion to the termination of its branches; beginning with the Gasserian, which lies in a depression at the inner end of the petrous bone, the nerve divides into three branches—the ophthalmic, the superior maxillary and the inferior maxillary, the two upper branches being

*Read before the American Academy of Ophthalmology and Oto-Laryngology, Chattanooga, Tenn., October, 1913.

entirely sensory, while the lower trunk unites with the motor root supplying muscles of mastication.

From the ophthalmic division there is given off a meningeal branch to the tentorium cerebelli and supplies nerves of sensation to the eyeball, conjunctiva, lacrimal gland, nasal fossa and skin of the nose, eyebrow and forehead. It receives branches of communication from the cavernous plexus of the sympathetic and from the third, sixth and occasionally the fourth; the lenticular ganglion situated in the orbit receives a branch from the nasal nerve and sends nerves to ciliary muscle and iris. The superior maxillary division gives off a meningeal branch and supplies nerves of sensation to the upper teeth, lip, cheek, temple and the lacrimal apparatus.

The spheno-palatine ganglion, which lies in the spheno-maxillary fossa, receives a branch from these nerves, one from the carotid plexus (the Vidian), a branch from the facial, and sends nerves to the pharynx, palate, turbinate bones and floor of the nose.

The association of the nasal and orbital nerve-supply is even closer than that of the circulatory system. The nasal nerve, which is a branch of the ophthalmic division of the fifth cranial nerve, passes through the orbit to the anterior ethmoidal foramen, then back to the cranial cavity in the region of the cribriform plate of the ethmoid, which it pierces to enter the nasal cavity to supply its anterior half. Its orbital branches are the two long ciliary nerves, the intra-trochlear nerve and a branch to the lenticular ganglion.

The ophthalmic artery, which sends branches to all of the orbital structures, sends off anterior and posterior ethmoidal branches and the nasal artery. Returning from the nose the ethmoidal veins enter into the superior ophthalmic vein, and as the orbital veins have no valves blood may pass in any direction.

The venous plexuses of the turbinate bodies empty into the pterygoid plexus and are in direct communication with the orbit by way of the branch to the inferior ophthalmic vein. Thus it is easy for organisms or their toxic products originating in the nasal accessory sinuses to reach the interior of the eye through the ciliary vessels which are branches of the above-mentioned arteries and veins.

The chronic forms of sinusitis present a large number of eye symptoms with comparatively no manifestations of nasal trouble. In the suppurative form of sinusitis, the middle turbinate body will be found in a state of hypertrophy, and the ethmoidal cells will break down under slight pressure; the discharge will be thick and

tenacious, with usually more or less odor, depending on the extent of retention of pus and necrosis.

In the chronic non-suppurative form of sinusitis, the ocular manifestations will be more obscure and uncertain than in the suppurative variety. In this form the middle turbinate is somewhat enlarged, which will probably show some polypoid degeneration on its under surface. If the middle turbinate lies close to the external wall, the polypoid degeneration may not be manifest in the early stages, but later will appear at the lower margin at the anterior end of the turbinate. The ethmoidal cells are generally filled with polypi, with frequent destruction of the intervening partitions due to pressure. Along with this condition, oftentimes, on account of the intra-sinus pressure, ocular structures may be affected through dehiscences in the bony partition, resulting in pressure upon the extra-ocular muscles, causing a train of symptoms tending to eye strain and more or less nervous phenomena.

Both of these forms obstruct more or less the circulation, and account for symptoms caused by the vascular changes.

The orbital manifestations of chronic hyperplastic ethmoiditis are of special interest, not only on account of the obscure picture which they often present but also on account of the frequency with which they appear. These are naturally of a mechanical origin, due either to the intra-cellular pressure from the hypertrophied mucous membrane, or from stasis in the hematogenous or lymph channels, or both. These may interfere with the mobility of the globe, irritate the optic nerve through pressure, produce changes in refraction or disturbance of physiological lacrimation.

The subjective symptoms consist of scotoma, neuralgia, pain in the eye, ciliary neuralgia and photophobia. In severe cases vaso-motor disturbances such as hyperemia of conjuctiva and edema of eyelids and peri-orbital tissues may occur. The appearance of these reflex neuroses is but to be expected when one recalls that the orbital and nasal cavities are supplied by the same sensory nerve.

The following cases have been selected because they give definite ocular symptoms without any evidence of previous sinus involvement, as has been demonstrated by the promptness with which ocular symptoms disappeared when the sinus trouble was corrected.

Case 1: Miss A., age 35, was referred to me with a history that for about two years she had had headaches, deep-seated between the eyes, and at times ocular pains. The symptoms were aggra-

vated by use of the eyes for near work, especially during the menstrual period, and had been growing progressively worse.

On examination, vision in both eyes was practically normal. Fundus examination showed considerable congestion of the optic disk; otherwise a normal fundus. On examining the nose, a badly deflected septum very much thickened at the posterior end was found, with considerable hypertrophy of the right middle turbinate.

An operation was advised for correction of the trouble. The hypertrophied portion of the middle turbinate was removed and a submucous resection of the septum done. On removing the deflected portion of the vertical plate of the ethmoid bone, on approaching near its posterior border, a large healthy penumatic cell was encountered with apparently no opening leading from it. While cutting away the edges of the cell with the bone-biting forceps, another cavity was broken into, which proved to be the sphenoidal sinus filled almost completely with granulation tissue. After making the opening as large as possible into this cell, two large masses of granulation tissue were removed, which proved to be a complete cast of the sinus. As there was no opportunity for after-treatment through this channel, a search was made for the natural opening in the right nostril and was found to be quite small. A generous opening was made down to the floor of the sinus, and each nostril packed to co-apt the layers of the septum. After the septum wound had healed and the sinus was treated for two weeks, the headaches and ocular pains disappeared and so far there has been no return of the trouble.

Case 2: Miss B., age 25, stenographer; for nine months had been suffering from repeated attacks of deep-seated headaches, far back between the eyes, with considerable mental depression. Examination showed vision of the right eye 20/20, left eye 20/40. Fundus examination was negative.

There was no history of nasal trouble, but as the eye symptoms gave no definite clue to the cause, an examination of the nasal cavity was made, which disclosed a very much enlarged posterior end of the left middle turbinate.

I advised the removal of this hypertrophied part. After snaring off about one-third of the posterior end I was able to locate the opening of the sphenoidal sinus. A canula was then passed into the sinus and a considerable quantity of foul-smelling, dark-green pus was syphoned out, after which on searching the sinus with a probe, I discovered what appeared to be a dehiscence in the bone in the left wall near the roof. After enlarging the opening, the

patient was placed in a recumbent position and the sinus filled with 12 per cent phenol-glycerin which was allowed to remain for twenty minutes. This was repeated every other day for about two weeks, at the end of which time the headaches and mental depression had both disappeared, with vision in both eyes 20/20.

Case 3: Mr. C., age 32, farmer, complained of pain in the eyes, photophobia and more or less dimness of vision for the last five months.

On examination, vision of right eye was found to be 20/20, left eye 20/40 with pronounced displacement of left eye outward, with marked diplopia, one image being more distinct than the other. There was no special tenderness or discoloration of the eye; fundus examination showed congestion of the disk and retina.

Nasal examination disclosed an enlarged middle turbinate on the right side with polypus showing under it. On removing the anterior end of this bone, a small polypus came away and what appeared to be a pedicel of another growth, which had been cut off by the snare, was projecting into the opening. This was grasped by forceps and after considerable manipulation and traction was removed and proved to be a polypoid growth one and one-fourth inches long and three-eighths of an inch broad. The direction from which it came disclosed the fact that the bulla ethmoidalis had been destroyed and that there was a dehiscence in the orbital wall, permitting the growth to pass through from the ethmoidal cell to the orbital cavity, and back part way around the globe.

This opening was packed lightly with antiseptic dressing and in ten days time had entirely closed. Two weeks later the globe had receded to its normal position, vision became 20/20 in both eyes, and binocular single vision was again restored.

Case 4: Mr. D., age 35, bookkeeper, had for some six months complained of headaches and inability to use his eyes for close work with great aggravation of symptoms, with at times intraocular pains which radiated to occiput.

On examination his vision in both eyes was 20/30 with some blurring; fundus examination showed hyperemia of the disk with some congestion in the retina, both eyes being much the same.

Nasal examination showed enlargement of middle turbinate on both sides, pressing both on the septum and the lateral wall. Some plegets of cotton, previously saturated with adrenalin, were placed in each nostril and were allowed to remain about ten minutes. After they had been removed, the patient expressed a feeling of greater comfort in his eyes than he had experienced in a long time.

A partial removal of each middle turbinate was done, and after healing had taken place, the ocular symptoms entirely disappeared. and in two weeks time vision in both eyes was 20/20 and has remained so to the present time.

Case 5: Mr. E., age 40; for the last two years had complained of headache and photophobia, with more or less vertigo upon using the eyes for close work. Vision 20/20 in the right eye, 20/40 in the left eye; fundus examination showed retina pale and vessels but partly filled.

On examining the nose, the septum was found to be deflected to right side, pressing on the posterior half of the middle turbinate bone. This was corrected by a submucous resection of the septum after which the ostium of the sphenoid sinus was located, which was unusually small.

On passing a canula into the sinus, the mucous membrane was found to be very much thickened and spongy, showing a chronic non-suppurative condition. The opening was enlarged down to the floor of the sinus, the patient was placed in a recumbent position and the sinus filled with 10 per cent phenol-glycerin, which was allowed to remain fifteen minutes. This treatment was repeated every other day for ten days, at the end of which time the symptoms complained of had all disappeared; vision was 20/20 in both eyes and he was able to do close work with comfort.

The immediate and pronounced favorable results obtained from surgical treatment of these accessory cavities should be further proof of the relationship existing between the nose and the eyes.

The opinions of different investigators differ somewhat as to which sinuses are most frequently involved in producing these obscure symptoms. I think the consensus of opinion, however, is that the ethmoidal, sphenoidal and maxillary sinuses in the order named, are most frequently involved.

I am in hearty accord with Brawley, who says: "When one considers the very intimate relationship between the orbital contents and the nasal accessory sinuses by way of the nerves, blood vessels and lymphatics, it is remarkable that sinus empyema does not oftener cause serious ocular disease."

When we consider that the orbit is from one-half to two-thirds surrounded by bony cavities, which are in direct communication with the nose, it is not hard to realize that pathological changes of these cavities may profoundly affect the ocular structures. The thickness of the bony wall between the orbit and sinuses varies considerably and in the majority of cases is quite thin, varying

from one-fourth to two millimeters, and at times is found to contain dehiscences of variable size, which admit of one cavity being readily affected by pathological conditions of the other; the influences are probably the most marked where the optic chiasm and nerve are in such close proximity to the sphenoidal sinus.

The liability of the optic nerve to become affected in sphenoidal sinus involvement is due in part to the fact that the nerve is not in a strict sense a nerve at all, but a central intercerebral cord (Spalteholz) having covering similar to the brain and spinal cord, and the fact that it has a higher specialized function, makes it more easily affected by pathological changes around it; while at the same time, the absence of sensation makes disease in this tract insidious.

As we go into the minutia of the parts involved and study more carefully their relationship, and by careful observation of clinical cases, together with transillumination and skiagraphic plates thus become more able to appreciate what many of the hitherto ill-defined and obscure symptoms mean, we must conclude that we have long been groping in the dark as to the cause for many of the abnormal ocular manifestations; but a closer study and a more careful watch of our cases of this nature cannot fail of a satisfactory explanation for many of them.

Treatment of Ozena by Sulphurous Thermal Water. ARMENGAUD. *Revue hebd. de Laryngol,*. Mar. 7, 1914.

In addition to the constitutional benefit derived from these baths, the local effects were quite marked in the cases reported. The local treatment consists of a thorough irrigation of the nasal cavities with thermal water, this being continued for five minutes, or until the mucous membrane is entirely free of crusts and secretions. The benefit persists for several months after the treatment, which should be repeated at intervals. Among the places which are cited as being of benefit are Cauterets, Luchon, Barege, Challes and Uriage.

SCHEPPEGRELL.

ATROPHIC RHINITIS, TREATMENT WITH SCARLET RED.*

Dr. W. C. Wood, Philadelphia.

In the October, 1913, issue of The Laryngoscope, Dr. K. K. Wheelock, in an article entitled "A new and efficient treatment of atrophic rhnitis," cited the results he obtained in a number of cases which he treated with scarlet red. These results so far surpassed any which I had ever been able to obtain by the various methods of treatment and with the numerous applications which have from time to time been suggested, that I decided to try this dye on the atrophic cases which were visiting the dispensary.

We all recognize the fact that the more numerous the drugs recommended in the treatment of any given condition the less do we usually know about that condition. This has been particularly true of atrophic rhinitis, and I believe that most of the benefit which has been derived in the past has been due not so much to the particular drug or preparation used but rather to the thorough cleansing of the parts at regular and frequent intervals. I have failed to produce any marked change in the appearance of the mucous membrane itself and have always seen a return to the previous disgusting condition just as soon as treatment has been discontinued. This has been due, I believe, to the fact that so little has been definitely known as to the etiology of the condition, and as proof of our uncertainty of the etiological factors we have only to go over the various tables as given by the authorities on the subject.[1] Perez[2] claimed to have discovered a specific agent, and asserted that every case originated by infection from another patient or from the muzzle of a dog. DeSimoni,[3] on the other hand, has "inoculated the normal mucous membrane with the Loewenberg-Abel bacillus, the diplococcus lanceolatus of Fraenkel, and also with crusts from cases of ozena, and in no instance did he succeed in reproducing the disease."

Congenital narrowness of the nasal fossae, undue patency of the nasal chambers, and arrest of development of the lower turbinals have been given as possible structural causes, but I believe they act only indirectly as factors in the production of atrophic rhinitis.

*Read before the Episcopal Hospital Clinical Society, Philadelphia, March 16, 1914.

Others claim it to be secondary to purulent rhinitis of childhood, ethmoidal osteitis, rarefying osteitis of the lower turbinals, accessory sinus disease, focal suppuration in the nose, accessory cavities, or post-nasal space, atmospheric desiccation and bacterial invasion.

Considering carefully the findings of the many observers, and considering also the clinical evidence presented by the cases which we see ourselves, the whole matter seems to narrow itself down to some condition which produces a muco-purulent discharge in the nasal chambers. If this be true, the following group of conditions would seem to be responsible, directly or indirectly, for the chronic rhinitis in question:—Congenital, developmental, or acquqired deformities resulting in a widely open or extremely narrow nasal chamber, suppuration from the accessory sinuses, and growths in the naso-pharynx with suppuration.

There is no doubt in my mind that the muco-purulent rhinitis of childhood precedes the atrophy in a great majority of cases, and that this discharge is the result either of a large adenoid or of suppurative sinus disease, or both, seems all the more probable when we remember the following facts:—"Suppuration in the frontal and maxillary sinuses seldom gives rise to symptoms of ozena, but it is not at all uncommon for pus in the sphenoidal and posterior ethmoidal cells to do so. Now these cells are present at birth and are close to the post-nasal space, so frequently the seat of suppuration in early childhood."[4]

With these facts before us, it would appear to me that the atrophy is not due directly to the deformity or obstruction present, with the resulting limited or increased space in the nasal chamber, but rather to the fact that the mucous membrane is being constantly bathed with a muco-pus, this going on over a long period of time, attended naturally with a chronic inflammatory condition, with circulatory and tissue changes and finally the atrophy, loss of sense of smell, altered secretion, and consequent crust-formation.

So much for the etiology of the condition. Now as to the treatment of these cases. Once the condition has been recognized, it becomes our duty immediately to determine, if possible, the underlying cause and to remove it. A deviated septum should be straightened as soon as the chambers have been made reasonably clean; the muco-purulent discharge, if still present, should be traced to its source and that region treated. Should there prove to be a large adenoid in the naso-pharynx, it should immediately be removed. If, on the other hand, the discharge comes from one or

more of the sinuses, the condition should be properly and immediately treated, either by washing and applications, or by surgical means, as the case may demand.

Having either failed to find the original cause of the atrophy, or having found and removed it, we must now turn our attention to the atrophic condition itself, and it is here that we have, as a rule, been unable to effect a cure. The removal of the cause, where it has been found, and careful treatment afterward has in many cases benefited the patient, at times arresting the process, stopping to some extent, at least, the formation of crusts, and decreasing or even eradicating the ozena, yet the atrophy of the tissues themselves remained, and many of the minor, yet disagreeable symptoms, persisted.

It is a peculiar fact that in a large number of cases, the atrophic condition is called to our attention for the first time long after the original cause has disappeared, and in spite of the fact that the patient must have had catarrhal symptoms over a long period of time. However this may be, the large majority of cases of atrophic rhinitis which we see present simply an atrophy, ozena, crust-formation, and in many cases, especially those of long standing, a loss of the sense of smell, and it is this end-group of symptoms which has seemed almost hopeless, requiring treatment over an indefinite period of time, and which relapse to the former disgusting condition just so soon as treatment is discontinued.

I have followed Dr. Wheelock's suggestion and used scarlet red in all the atrophic cases coming to the dispensary; and I believe the results obtained are just as noteworthy as those in his cases. Whether these cases will relapse after the discontinuance of treatment or not remains to be seen, but there is no doubt the results obtained over the short period of time I have used scarlet red far surpass any I have been able to obtain in the past. No case failed to show marked improvement in two weeks after the initial treatment. The crusts almost entirely disappeared in this length of time and continued to decrease in quantity with each treatment, until they finally disappeared. The mucous membrane resumed its normal color and thickness, and the ozena was no longer noticeable. This has been the history of all the cases under treatment and I will outline briefly the history of one of the most marked of the group.

Mrs. J. B., age 46; injury to nose at age of 10. This was followed, evidently, by a profuse purulent discharge which lasted about three years. The discharge then decreased but she says she has had "catarrh" with some discharge ever since. Some three years ago the crusting and ozena became so marked that she applied at one of the

dispensaries here in the city for treatment. She first came to the Episcopal Hospital dispensary about one year ago and at that time presented the typical symptoms of atrophic rhinitis. The crusts were large, forming casts of the nasal chambers; there was a marked ozena and an entire loss of the sense of smell. She stated at that time that she had not been able to detect odors for about two years. Treatment was immediately started, the chambers being thoroughly cleansed and various applications made. The application then used, which seemed to do the most good, was a saturated aqueous solution of potassium permanganate, but the crusts and ozena never entirely disappeared, and at no time did she regain the sense of smell.

About December 1, 1913, I started using scarlet red and the results were almost incredible. The crusts and ozena disappeared, the membrane itself thickened and regained its normal color, and to my surprise, after about six weeks' treatment, she told me she was able to smell. I held a bottle of ichthyol under her nose and, with a look of disgust on her face, she remarked that the odor sickened her. I am, therefore, very naturally delighted with the results so far obtained and only hope that they may be as lasting as they were prompt.

In closing I will give an outline of the technic employed. In the first place I originally applied the scarlet red ointment which is used here in the surgical dispensary. This I am told is a 10 per cent ointment. I found, however, that was too stiff, rolling up and falling from the turbinals as fast as it was applied. The druggist then thinned it down for me with liquid petrolatum until we had an ointment which would spread nicely over the turbinals and adhere to them. This resulting ointment was a little over 5 per cent.

I first applied hydrogen peroxid to both nasal chambers and thoroughly removed all crusts. The nose was then carefully sprayed with an alkalin, antiseptic solution, after which the scarlet red was applied to every portion of the mucous membrane in the nose, and the patient instructed not to blow the nose immediately but to wipe the secretions away as they appeared at the external nares. There seemed to be no noticeable reaction after the application, nor did the patient complain of any disagreeable sensations.

After a few treatments, however, the patient notices a stinging sensation after the scarlet red has been applied, which, together with the return of the sense of smell, would seem to indicate a regeneration of the nerve filaments, an observation made also by Dr. Wheelock in his report.

BIBLIOGRAPHY.

1. St. Clair Thomson: Diseases of the Nose and Throat, 1912, p. 129.
2. *Ibid*—(with references), p. 131.
3. *Ibid*—(with references), p. 131.
4. Clement F. Thiesen: The Laryngoscope, Vol. 18, No. 6, 1908, p. 417.
5. Phillips: Diseases of the Ear, Nose and Throat.
6. Shurly: Diseases of the Nose and Throat.

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A Case of Local Tuberculosis of the Nasal Mucosa. C. Compaired. *Revue hebd. de Laryngol,* April 25, 1914.

Nasal tuberculosis is rare, only 177 cases having been reported in rhinologic literature. Poutchkwosky observed only three cases in his large clinic and Compaired saw only one case in 25 years of practice. In the case reported the extirpation and cauterization of all the diseased tissue was followed by a cure without which there would probably have been a diffusion of the diseased process into the general system.

Scheppegrell.

Angioma of the Nasal Alae. Rene-Celles, *Revue hebd. de Laryngol,* April 11, 1914.

As in other regions, angiomas are accidental productions due to the dilatation and multiplication of the vessels which transmit the blood from the arteries to the veins. Angiomas of the nasal alae are rare. They may cause hemorrhage or difficulty of breathing, if sufficiently large. In the cases reported, the treatment consisted of electrolysis or excision, according to the case.

Scheppegrell.

SURGERY OF THE FAUCIAL TONSIL AS IT RELATES TO THE FUNCTIONS OF THE TONGUE AND SOFT PALATE IN THE PRODUCTION OF VOICE.*

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The faucial tonsil differs from other tonsils chiefly in respect to the conditions attendant upon its location in the pharynx. The pharyngeal tonsil hangs pendant from the smooth, bony and aponeurotic surface of the vault, and the lingual tonsil is attached to the single muscle forming the base of the tongue, whereas the faucial tonsil has a more or less close relationship and in many instances actual attachments, not only to the intra-pharyngeal aponeurosis, which for convenience sake has been called the capsule of the tonsil, but also to the following important phonatory and articulatory muscles:—namely, the superior constrictor, the palato-pharyngeus, the palato-glossus and the lingual muscles. So closely and intimately is the faucial tonsil related to these important organs that in its normal state it forms with them a beautiful and unique mechanical structure varying in outline and presenting the recesses and half arches or columns which give to the lateral wall of the pharynx its distinctive acoustic characteristics. The location of the faucial tonsil, however, in the very midst of this network of muscles renders it particularly liable to infectious diseases, and therefore its surgery has come to be a matter of considerable importance.

There are two kinds of tonsillar surgery and they may be broadly designated as radical and conservative or palliative. Radical tonsillar surgery, as its name indicates, aims to enucleate the gland, or failing in this to remove as much as possible of it including the capsule, while conservative or palliative surgery aims to remove only so much of the gland as is obstructive, and at the same time to so open up diseased crypts and deep retention-pockets that satisfactory drainage to the tonsillar region is established without interfering in any way with the characteristic structure of the pharyngeal walls.

The modern tendency is toward radical surgery of the tonsil, and this is probably due to a desire to be thorough and to be sure of removing all sources of infection.

*Read before the Division of Surgical Specialties of the Clinical Congress of Surgeons of North America, Chicago, November 12, 1913, and by invitation before the Philadelphia Laryngological Society, March 17, 1914.

Formerly the surgeon was satisfied with so-called tonsillotomy or the removal of the projecting portion of the gland, but this operation fell into disrepute largely because it resulted in the formation of adhesions between the cut portions of the gland and the faucial pillars, and a sealing of the crypts at their point of section; thus encouraging the formation of numerous retention-pockets which became hot-beds of infection and defeated the very purpose for which the operation was designed.

The tonsillotomy or section of the tonsil as it is usually made is in the wrong plane of the tonsil. If it were made more nearly in the horizontal instead of the vertical plane, thus removing the upper pole including the supra-tonsillar fossa and leaving the lower pole intact, it would be a much more satisfactory operation and it would meet nearly if not quite all the requirements of a radical tonsil operation.

Tonsillotomy, as it is usually performed however, is not worthy of being classed among the conservative tonsil operations, and like so-called surface cauterization its practice should not be generally recommended. But there are other conservative procedures which are worthy of consideration. I refer to those which may result in giving good drainage to the diseased tonsillar crypts and to the tonsillar fossa without removing the entire gland and without doing injury to the capsule or to the palatal muscles or the mucous membrane covering them.

During my early apprenticeship in surgery I devised a knife with the blade at an angle of about 120 degrees to the handle, for the purpose of conservative tonsillar surgery. Many similar knives have been devised from time to time by other surgeons and for a similar purpose, namely to open up diseased tonsillar crypts and other retention-pockets formed by various inflammatory adhesions. My custom has been, after freely opening the pockets with the sharp knife, to sear the edges with the actual cautery; thus preventing a union between the cut-surfaces and causing also a marked diminution in the size of the gland itself.

Someone has said that in doing a little good one should take heed lest he do a great harm, and this injunction is particularly applicable to the surgeon who operates in the region of the pharynx.

The two considerations which should actuate us in the performance of tonsillar surgery are: first, to improve the general health of the individual, and second, to improve his voice. While these two considerations are not strictly speaking antagonistic, yet it is unfortunately true that an operation upon the tonsils may im-

prove the general health of the individual and at the same time do a grave injury to his voice. The converse of this proposition, however, is not equally true because any operation that improves the voice must of necessity at the same time improve the general health, because good health is absolutely essential to good vocalization.

It goes without saying that no surgical operation is ever indicated in a normal pharynx because, forsooth, the faucial tonsils may have some slight and benignant function in the human economy, although only a few of the younger of us have reached absolutely definite conclusions in reference to this matter. I am one of those who take it for granted that the faucial tonsil has important bactericidal and protective systemic functions, and I am convinced beyond doubt that in its normal state at least it has some very important mechanical functions which are particularly operative in the production of voice and speech.

The lateral walls of the normal pharynx present, as I have said, certain distinctive structural characteristics, and in this respect they bear a close resemblance to the lateral walls of the larynx. These distinctive structural characteristics—and I refer particularly to the anterior and posterior half arches of the palate with the tonsils separating them and directing their muscular action—are not biological accidents or variants, but they are always present, and until attacked by disease and except in respect to their size they are always practically the same.

Moreover, the soft palate, the integrity of which is so essential to the distinctive structural characteristics of the pharynx, has important muscular connections not only with the tongue but also with the larynx itself. It will be observed, therefore, that the three most important peripheral organs of phonation and articulation—namely, the soft palate, the tongue and the larynx—are anatomically and physiologically inter-dependent, and they also have many points of similarity.

I have called attention elsewhere to the importance of the soft palate as an organ of phonation and articulation and I have especially emphasized its valvular action in the pharynx and its cord-stretching action in phonation through its connection with the larynx by means of the palato-pharyngeal muscles.

The soft palate, the tongue and the larynx are similar in that they are all freely movable organs, and their position at any particular instant during phonation and articulation varies not only as it relates to each one of them individually but also as it relates to the more or less fixed spinal column. These variations in posi-

tion take place with great rapidity and great precision, each particular tone or quality of voice in singing and each inflection in speaking requiring its own particular palatal, lingual and laryngeal position. The close anatomical relationship of these organs due to their muscular attachments makes the position of each one of them dependent largely upon that of the others. A low-hanging soft palate, for instance, which has become so, owing to a defective action of the levator muscles will result not only in a faulty position of the larynx, but also in a faulty action of the vocal cords.

Paresis of the palatal muscles, however slight, always brings about a corresponding disturbance of the laryngeal musculature. In other words, owing to the anatomical and physiological interdependence of these organs, palatal insufficiency always results in laryngeal insufficiency and the corresponding forms of vocal disability. The palatal muscles are virtually and practically extrinsic laryngeal muscles, the palato-pharyngei having direct connection with the larynx, while the palato-glossi have an indirect connection with it through the muscles of the tongue.

This brings us to a consideration of the faucial tonsil in its relation to these important organs of phonation and articulation. There are two kinds of faucial tonsils—the normal or physiological and the abnormal or pathological tonsil. Just as the normal tonsil is essential to the normal structure of the pharynx and helpful to the normal action of the palato-lingual and palato-laryngeal muscles in voice-production, so the abnormal tonsil may cause distortion of the pharyngeal structures and interfere with the action of the muscles.

The distinctive anatomical characteristics of the faucial tonsil are largely incidental to its location in the pharynx. The somewhat irregular folds found in the lymphoid tissue in the vault of the pharynx and the follicular character of the so-called lingual tonsil give way to the more highly developed lacunae and crypts of the faucial tonsil, these differences of structure following as a natural consequence of its more or less concealed or buried position between the palatal pillars.

The faucial tonsil is not a homogenous organ but is rather complex both in respect to its development and in respect to its structural arrangements. The rudiments of the gland are laid down in the dorsal prolongation of the second branchial cleft during embryonic life, and the sinus in which it develops is divided later by a fibrous fold into an upper and lower portion. This ingrowing or intra-tonsillar fold as it has been called soon disappears, but not

until after it has marked the boundary line between two distinct portions or lobes of lymphoid tissue, the upper one becoming the upper pole of the tonsil in which we have the supra-tonsillar fossa and the other one the lower pole of the tonsil or the gland proper.

The lymphoid tissue entering into the formation of the upper pole of the tonsil and its supra-tonsillar fossa is the first to appear in the early development of the gland, and it always remains somewhat rudimentary in character. This undeveloped or rudimentary condition of the upper pole of the tonsil and the concave or bowl-like shape of its fossa, combined with the fact that nearly, if not quite all, the crypts from the lower pole of the tonsil proper open into it, render this region extremely liable to disease.

In considering the relation of the tonsil to the pharyngeal structures the so-called capsule should not be overlooked. Authorities differ widely with reference to the anatomy of the capsule of the tonsil, and this seems to be due to the fact that the tonsil changes so much with the various stages of its development and also with the various pathological conditions which arise in this region.

Dr. D. R. Paterson, surgeon to the throat department of the King Edward Seventh Hospital, Cardiff, who has made many sections of the tonsil in its various stages of development, says that anatomically, in the first instance, the capsule is no essential part of the tonsil; it is nothing more nor less than a portion of the intra-pharyngeal aponeurosis or fascia attached above to the base of the skull and extending down between the superior constrictor and palatal muscles as far as the cellular portion of the esophagus, and as its development goes on, the tonsil becomes more and more closely adherent to this fascia until during the process of "physiological sclerosis" in more advanced life it actually becomes an integral part of it, building upon it and increasing its thickness by the addition of its own connective tissue. "Like the larva," says Dr. Paterson, "which spins its own cocoon, the tonsil may be said to weave, or, at least, to add to its own capsule," and thus a stronger wall of defense is formed against injury or systemic infection through the tonsillar region during advanced life.

Although this theory may not be in accordance with the more or less generally accepted views with reference to the anatomy of the capsule of the tonsil, yet those of us who have had a large clinical experience know that in many instances an extra-capsular enucleation of the tonsil necessarily involves a kind of window resection of the intra-pharyngeal aponeurotic sheath, and in some instances also, where fibers of the superior constrictor muscles are

lacking, a resection even of a portion of the extra-pharyngeal aponeurosis to which the gland has become firmly united. The tonsil that is easily removed from its bed and turned out of its capsule somewhat as a finger is removed from its stall in a glove is either a very young tonsil or not a pathological, but a normal one which in all probability should not be removed at all.

It appears, therefore, that we are dealing with a complex and a somewhat highly specialized organ, composed largely of lymphoid tissue, the systemic function of which is similar to that of the less highly organized lymphoid tissue found in other parts of the body, and this function is operative chiefly during childhood or up to the fifteenth year, after which time its function becomes more mechanical in character and is chiefly operative in phonation, articulation and deglutition.

Let us now consider just what happens during and after the operation for extra-capsular enucleation of the tonsil. In the first place, all that portion of the pharyngeal mucous membrane which covers the tonsil and extends into its deeper recesses and crypts is removed, and the tonsil itself together with that portion of the intra-pharyngeal aponeurotic sheath which may be attached to it is dissected out, including in many instances also fibers from the palato-pharyngeus, the palato-glossus and the superior constrictor muscles, and when, as occasionally happens, the superior constrictor muscle is thin or absent in the region of the tonsil, our resection may include also a portion of the peri-pharyngeal aponeurosis. This operation leaves a large, deep cavity with a surface of granulation extending from two to four square inches. Opening into this cavity we have the cut or torn edges of the pharyngeal mucous membrane, and in many instances the raw surfaces of the three important muscles to which I have referred—namely the palato-pharyngeus, the palato-glossus and the superior constrictor muscles, together with the cut or torn edges of the resected portion of the intra-pharyngeal aponeurosis, which it will be recalled is often muscular as well as fibrous in its construction. In those cases in which fibers of the superior constrictor muscles are wanting, we may have also a resected portion of the peri-pharyngeal aponeurotic sheath.

The final results of this somewhat extensive dissection are what we should naturally expect, namely a contraction of the cavity and a more or less firm cicatricial union between these cut or lacerated surfaces, binding them all together at central points of cicatrization, and thus two or three months after the operation the old land-

marks that characterized the distinctive features of the walls of the pharynx are practically gone forever. Instead of the beautiful clean-cut, sharp edges of the palatal pillars during phonation and articulation, and the well-marked pharyngeal recesses both between and on either side of the pillars, we have plain oval pharyngeal walls with occasional bands of tense fibrous tissue coming into greater prominence when the mouth is open and the tongue depressed. Moreover, after the normal mucous membrane of the parts is destroyed its place is occupied by smooth, cicatricial tissue, having a glistening surface and no mucous secretion whatsoever.

The cicatricial bands, of which I have spoken, frequently give rise to painful tugging-sensations in the pharynx, and the absence of normal lubricating glands in this region often causes a dryness which in some instances becomes exceedingly annoying.

Now what effect must all this have upon phonation and articulation? In the first place it is not unusual to have the patient tell us in a proud way that he or she can sing one or two notes higher than before the operation, but surely this is not a "consummation devoutly to be wished," for the higher pitch is always reached at a sacrifice of other and more important or desirable qualities of the voice. It is accuracy of pitch and an indefinable something which we call timber or quality that is desirable and that should be sought after, but accuracy of pitch and that marvelous something that distinguishes the great voice from the ordinary voice cannot possibly exist or be acquired under the physical and neuro-muscular conditions which necessarily exist after a complete extra-capsular tonsillectomy. However carefully and skillfully the operation may be done, we must of necessity have a more or less crippled palate and tongue, and resultant inaccuracies in the action not only of the extrinsic but also of the intrinsic muscles in the larynx. The natural free movements of these three organs—the palate, the tongue and the larynx—during phonation and articulation are wanting because the smooth, well lubricated musculo-aponeurotic sheath with which they were in close relationship has been in part removed and the tonsil itself, which formerly served to keep the muscles in their normal relations and guide them in the direction of their activities, has been sacrificed and there have been substituted the resultant scar-tissue, fibrous adhesions and insufficient lubrication.

These results follow, be it understood, however well and adroitly the operation may be done, but when we consider how often it is

badly or mal-adroitly performed and how exceedingly more unfortunate are the results attendant upon such procedures, we have an additional reason for teaching conservatism in this operation.

At the last meeting of the American Medical Association, Dr. Sheedy, in discussing the tonsil question, said that in a careful study of the secondary results following 100 tonsillectomies in New York City, more than 80 per cent had deformed palates, and in only about 20 per cent did the palatal pillars even approximate the normal. This report is in entire accord with my own observations in the study of a far greater number of cases in Philadelphia. It is the exception rather than the rule to find the palatal pillars approaching the normal after the radical operation, and I have never seen anything like perfection in their action during phonation after an extra-capsular tonsillectomy in an adult patient.

But you will ask why I seek perfection in the action of these muscles, especially since perfection is found nowhere else in nature. My reply to this is that the human pharynx or throat, by a beautiful provision of nature, furnishes us with the most wonderful of all musical instruments. No two of them are exactly alike and yet structurally they differ but little the one from the other. It is the slight, the almost imperceptible structural differences, however, that help to distinguish the great voice from the ordinary voice.

The mechanical instrument which most nearly approximates the vocal instrument in the human quality of its tones is the violin, and the two instruments are in some respects similar. For example, both may be very good and both may be very bad, and it is not always easy to tell why this is so. One violin, for instance, looks very much like another. You and I might not be able to tell them apart, and yet to purchase the one would cost you thousands of dollars, while you may have the other for $1.50. The difference, we are told, is in the materials of which they are made and in the way they are put together. So I think we may look for the differences in vocal instruments. Who has ever heard of a truly great singer having ever undergone an extra-capsular tonsillectomy? The great voices are the product of the more nearly perfect instruments and these in turn are the products of nature and not of art.

In considering the function of the tonsil much time has been given to the study of its systemic effect upon the individual and much more time and labor will have to be given before we arrive

at conclusions that may serve as a basis for intelligent work in this line. We do not know the systemic functions of the tonsil and we may never know them, because of the difficulties which arise in making the necessary investigations. Judging from the conflicting statements of those who have made a special study of the subject, we do not even know the minute anatomy of the faucial tonsils and of their setting in the pharynx, to say nothing of their physiology and general relation to the human economy. All this is a strong argument in favor of surgical conservatism.

The mechanical functions of the tonsil in phonation, articulation and deglutition, have received but little attention, and I am convinced that a greater knowledge in this direction would lead to greater conservatism in tonsillar surgery.

The normal tonsil, and by this I mean the healthy tonsil and the one of normal or approximately normal dimensions, is not only beneficial to voice-production, but it is absolutely essential to the attainment of the highest artistic results in singing and speaking.

The functions of the tonsil in phonation and articulation are three-fold: first, it serves to maintain the normal anatomical relations of the soft palate, the tongue and the larynx not only to one another, but to the comparatively fixed spinal column; second, it serves to keep the pillars of the palate apart and to direct them in their phonatory and articulatory activities; and third, it has in itself important acoustic properties in artistic vocalization.

The mechanical functions of the tonsil are somewhat analogous to those of the nasal and laryngeal cartilages. Just as these cartilages are essential to the structural integrity of the nose and larynx, so the tonsil serves to maintain the various parts of the walls of the pharynx in their normal structural relations, and its absence or its removal always results in a partial collapse of these structures. Moreover, like the cartilages of the larynx the tonsil has attachments to the various surrounding muscles and thus it influences and directs their activities.

As to the resonating function of the tonsil, we know that the tones of the violin are materially changed by the insertion of any foreign substance of varying density into the body of the instrument, and reasoning from analogy, therefore, tonsillar tissue being of a different density from the surrounding structures in the fauces must have some effect upon the resonance of the oral cavity. Just as the normal tonsil is helpful in voice-production, however, the abnormal tonsil may be altogether prejudicial, and

it may be prejudicial to such an extent as to make some kind of tonsillar surgery absolutely imperative.

There are three ways in which the abnormal tonsil may be injurious to the voice: first, it may obstruct the outgoing column of vibrating breath; second, it may interfere mechanically with the action of the muscles; and third, it may interfere with the neuromuscular activities of the pharynx by the local infection which it generates.

The three kinds of abnormal tonsils, therefore, which interfere with voice production are: first, the very large discreet tonsil that projects considerably beyond the edges of the palatal pillars and is more or less pedunculated; second, the large so-called submerged tonsil or the one held within the grasp of the palatal pillars and plica; and third, the smaller and chronically diseased tonsil which is undergoing degeneration. The first two types of hypertrophied tonsil may give no symptoms whatsoever except those of obstruction and pressure, while the third type is one presenting foci of infection and causing occasional attacks of peri-tonsillitis. These three types of tonsil belong chiefly to adult life, and they usually appear between the ages of 15 and 35. Moreover, this is the period also of artistic vocal development and the period during which the condition of the tonsils may make or mar the voice.

Before 15 years of age, the tonsils are exercising their bactericidal and protective functions and their very hyperemia and hyperplasia may be an evidence of their activities in the performance of these functions, but after 15 years of age, they are physiologically less active and they gradually undergo important physical changes. Their mechanical functions now come into greater prominence, and tonsillar surgery should aim not to destroy but to maintain their mechanical efficiency.

The surgery of the faucial tonsil may be considered under two headings: first, that of childhood, and second, that of adult life. The tonsillar surgery of childhood should be as conservative as possible, because then if ever the tonsils are exercising their systemic functional activities, and the tonsillar surgery of adult life should be conservative because of the mechanical functions of the tonsil in artistic vocalization.

The two conditions of the tonsil which require surgical interference are true hypertrophy or chronic hyperplasia and actual primary disease of the tonsil. A tonsil may be very large, while in other respects it is entirely healthy. Such a tonsil calls for conservative, rather than radical, surgical measures.

Actual disease of the tonsil is exceedingly difficult of diagnosis, and some one has well said that one must enucleate it before he can be sure that it is diseased. The so-called diseased tonsil is oftentimes not a diseased tonsil at all, but its condition is merely symptomatic of some general systemic affection. Moreover, a tonsil may be diseased only in part. A single crypt may become a focus of infection, while the other crypts and the remaining portion of the tonsil may be healthy or only secondarily disturbed. The total enucleation of the tonsil under these conditions would seem to be wholly uncalled for. One might almost as well think of amputating a hand because of an infection limited to a single finger.

Recurrent tonsillitis or even peri-tonsillitis may often be cured without resorting to radical surgery. Tonsillitis may be, and often is merely an expression of a systemic condition, and thus may be comparable to the rash of measles or typhoid fever, and peri-tonsillitis may result not from tonsillar infection at all but from extra-tonsillar infection.

The most puzzling cases of tonsillar disease are those in which the tonsillar region is suspected of being the portal for the entrance of infectious organisms into the general system. It is supposed that there comes a time when, on account of its diseased condition, the tonsil ceases to be a protective organ and actually becomes an infective organ, and thus a menace to the individual. The fact, however, that the tonsillar defense appears to be broken down, would seem to be an argument for its repair, rather than for its total annihilation. The removal of the tonsil, therefore, merely upon suspicion and without a thorough investigation of the conditions would scarcely seem to be a justifiable or scientific procedure.

Before doing a complete tonsillectomy, it would seem only reasonable to demand a thorough differential diagnosis. It is easier to enucleate than it is to investigate, and especially is this true with our improved technic, in the perfection of which we have spent so much valuable time. I predict that future years will find us trying not how best to enucleate but how to avoid enucleation.

In the great majority of instances there is really only one good reason for doing an extra-capsular tonsillectomy, and that is the difficulty of doing an intra-capsular tonsillectomy. I grant you that a tonsil may be more thoroughly removed by the former operation, but I deny the necessity for its thorough removal. Good drainage, as a rule, is better than tonsillectomy, although it may not be so easily accomplished.

And, finally, because of the mechanical functions of the faucial tonsil in phonation and articulation, if for no other reason I would protest not against tonsillar surgery, but against unnecessary tonsillar surgery and especially against extra-capsular tonsillectomy as a routine measure, and in its stead I would suggest the conservative measures to which I have referred, and in extreme cases what, in lieu of a better term, I would call intra-capsular tonsillectomy or a careful dissection of the gland from within its pocket in the intra-pharyngeal aponeurosis. This is a more difficult and more tedious procedure, but I have found it not to be an impossible one, and the fact that some tonsillar tissue may remain after the operation, is no great objection to it because when the operation is properly performed, good drainage, the *sine qua non* of every operation, is thoroughly established.

The extra-capsular tonsillectomized pharynx is always necessarily a damaged pharynx, and the radical operation should only be done when the damage to the pharynx and to the individual threatens to become greater by leaving it undone.

All the really great singers have tonsils, and they probably would not, and could not, be as great without them. Obviously the singers to whom I refer are not those who have pathological tonsils, for they also would damage the pharynx and preclude the possibility of their becoming great singers.

The whole question as to the final effects of tonsillar surgery upon phonation and articulation lacks clearness in our minds because we are not good judges or critics of the voice. We cannot always distinguish between artistic and mediocre singing tones, and we are, to a great extent, satisfied with merely intelligible articulation. The patient's own testimony is of little value because he is not a good judge of his own voice unless, perchance, he happens to be a trained singer who has learned to make fine distinctions as to tone and quality.

The voice specialist and the throat specialist are at odds in this matter because they do not understand each other's point of view. The singer is afraid of the surgeon and he will continue to be afraid of him and in many instances to dispense with his services until the surgeon begins to have regard for the singer's voice as well as for his health.

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SOME SURGICAL CONDITIONS OF THE JAW.*

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There are several operative conditions of the jaws that have been somewhat overlooked by the general surgeon, and also by the dental surgeon. Among these are fractures of the jaw, epuli (tumors of the gums) and cysts. It is, of course, very hard for me to say very much about these three conditions in a twenty-minute talk, but I thought I would touch upon these diseases to-night.

Fractures of the inferior maxilla are quite a common occurrence in a great city like ours. They generally occur in the young male adult, and are often caused by a blow of the fist. About ninety-eight per cent of these fractures are compounded, where there are teeth in the mouth. They are generally simple fractures when the jaws are edentulous, or where there are no teeth present.

The most important part of the treatment of a fractured jaw is, as in other fractures, reduction and fixation. It is more difficult to get perfect fixation of a fracture of the lower jaw than in other bones, as this bone is being played upon all the time by many muscles, and is hardly ever at rest. A strong and carefully constructed splint is required to hold the fractured parts co-apted, and sometimes it is necessary to make quite an elaborate mechanical appliance to get good results.

True fractures of the upper jaw are very rare. During the last eight years, at the New York College of Dentistry, we have treated over eleven hundred fractures of the lower jaw, and have had only six fractures of the upper jaw. The alveolar process of the upper jaw is often fractured, but these fractures seldom extend to the body of the bone, and do not very often involve the antra. These fractures are best treated by means of wire cribs and rubber splints, cemented to the teeth.

Small tumors of the gum, or epuli, are caused often by a sharp tooth or an ill-fitting crown, and the majority of these growths are fibromas. They seem to occur more often in women than in men, and most usually in Jewish women of middle age, who have had several children. They are quite vascular, but are usually slow-growing. At the Dental College where we see a great many of

*Read at the meeting of the New York Academy of Medicine, Section on Laryngology and Rhinology, March 25, 1914.

these cases, we find that there is a distinct relation between these tumors and pregnancy. Our records show that these growths often start in the early months of pregnancy, and grow quite rapidly until child-birth. They are more vascular during this period, and after pregnancy, they seem to become less so. Their growth seems to be retarded after this period.

Several of our patients have given histories of having had an epulis start at the beginning of pregnancy and having had the

Figure 1.

growth removed, but having recurrences of it at subsequent pregnancies.

These epuli usually grow from the periosteum lining of the alveolus, or from the socket of the tooth, sometimes from the peridental membrane of the tooth itself. Most often they grow around a tooth or a tooth-socket that is infected. A thorough removal of the periosteum and the alveolar process and the teeth involved

in the region generally effects a permanent cure of these cases.

Dentigerous cysts, cysts that contain teeth, are more common than one would suppose, but their pathology has not been very thoroughly investigated. They are most often lined by a fairly thick, tough membrane, and contain a thin fluid, and often pus.

These cysts are generally caused by some irritation—usually a tooth that, for some reason has become impacted and does not erupt, and becomes encysted. They take many years to form, as a rule, and often cause great destruction of the bone. The treat-

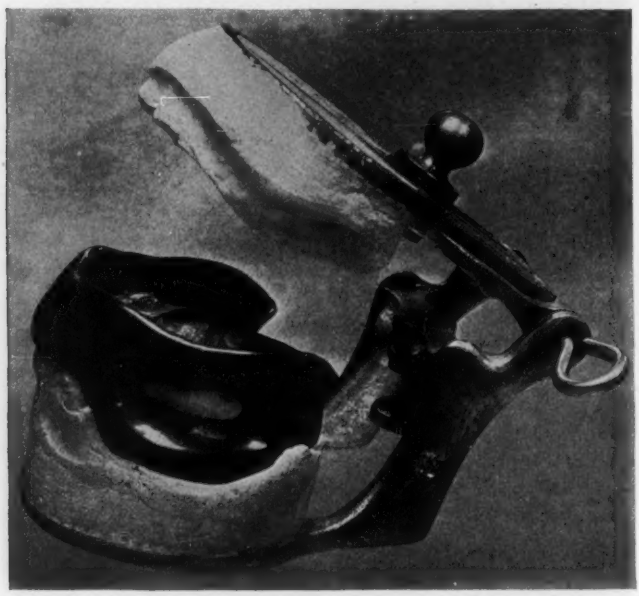

Figure 2.

ment of these cysts is to open them, and to remove the sac and contents, and to thoroughly curette the bony cavity. The cyst cavity, as a rule, heals in very nicely with granulations. The cavities should be irrigated and packed with gauze daily to prevent them from becoming infected by having food, etc., pack in the wound.

Case 1 shows a cap splint or single arch splint which is cemented to the teeth. It is made of rubber or metal and is used in every case where there are one or more sound teeth on either side of the

line of fracture to which the splint can be cemented. It is left on for about four weeks, and during this time the patient has full use of the lower jaw, and can masticate easily. This splint cannot be used in any fractures posterior to the third molar. It is not of much use in fracture of children's jaws, as their teeth are not strong enough to cement the splint. No bandage is used when the splint is applied.

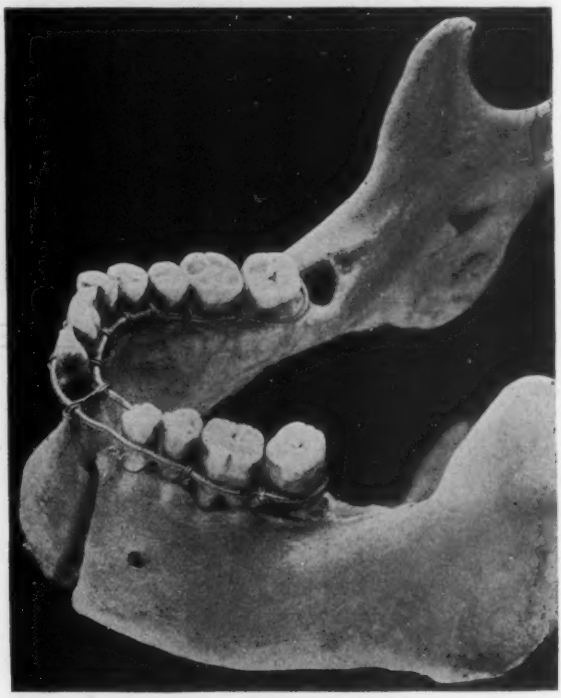

Figure 3.

Case 2 shows an old-fashioned interdental splint, which is used very little at present. It is a dirty, clumsy affair, and need only be used in edentulous cases, and in fractures occurring in children, where the teeth are not strong enough to hold a cemented splint, and where the angle method of wiring cannot be employed.

Case 3 shows a wire crib splint which is sometimes used. It is not a good form of splint, is hard to keep clean, injures the gingi-

val margin of the gums considerably, and is, for this reason, often the forerunner of pyorrhea alveolaris.

Case 4 shows the Angle system of wiring upper and lower jaws

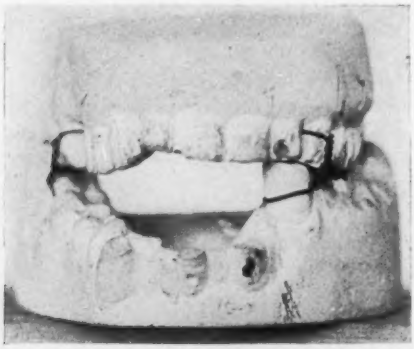

Figure 4.

together, and is a very good method where the fracture is situated posterior to the third molar, where the fracture cannot be held by a splint in the mouth. The wire is made of tin and brass, and

Figure 5.

is much tougher than silver wire. The upper jaw is used as a splint against which the lower jaw is held.

Case 5 shows a typical benign epulis which occurred in a Jew-

ish woman, 47 years old. She had a badly neglected mouth, and a general pyorrhea condition was present. The growth was about one year old when I saw the patient. It was thoroughly excised, and several broken-down roots removed under the growth. It has not recurred, to my knowledge.

Case 6 is the same type of tumor, and shows what great force is exerted by these growths at times, and how easily the teeth are separated, loosened and often exfoliated. This growth occurred in a Jewish woman, 38 years old, and was thoroughly excised, and

Figure 6.

the neighboring teeth removed with their alveolar sockets. No recurrence after two years.

Case 7 shows another epulis which was caused by two ill-fitting gold crowns on the second bicuspid and first molar. The gold crowns pressed on the gum tissue, and at first caused congestion, and, later, a hypertrophy which developed into an actual new growth. The cuspid and bicuspids were removed, and the alveolar process partly removed and curetted, and there has been no recurrence after three years.

Case 8 shows an epulis which is attached to the gum and periosteum by three pedicles. It grew around a molar tooth that had a large cavity in it. The sharp edge of the cavity caused the irrita-

tion of the gum. The tooth became loosened after a few months, and was thrown off. The growth was of about two years' duration when this picture was taken. The patient was a woman of 35 years. Thorough excision resulted in a permanent cure.

Case 9 shows a true bony multi-ocular cyst of the lower jaw, situated under an infected, broken-down first molar. This cyst

Figure 7.

occurred in a young man of 17, and probably had been developing for several years before the patient noticed it. He had a large swelling of the jaw, and there seemed to be a thinning out and jaw. I do not believe that the cyst caused the death of the first

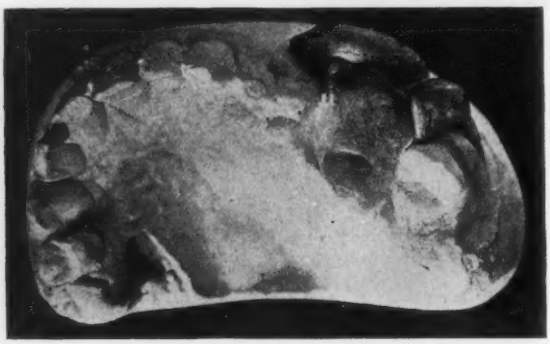

Figure 8.

molar, as that had a large cavity in it which caused an exposure of the nerve of this tooth. The cyst, however, became infected from the death of the molar, and, when it was opened, the cyst sac contained thin pus. The two molars were removed and also the lining membrane of the cyst cavity, and, after a thorough curettage, the

wound was irrigated and packed with gauze incorporated with bulging of the internal and external alveolar plates of the lower white vaseline and bismuth. This packing was changed, and the wound irrigated daily for some weeks, and eventually the wound filled in with healthy granulating tissue. I believe that the third molar will erupt in about its normal position as its vitality was not disturbed.

Figure 9

Case 10 shows a true dentigerous cyst of the ramus of the lower jaw. The cyst involves the entire ramus and part of the body of the jaw. It was lined by a thick membrane and in this membrane was found a developing third molar. The patient was a man about 35 years old. He had noticed a swelling on the side of his jaw for about five years, and had a slight discharge of pus from a sinus in his mouth. He had never suffered any pain and there had been no disturbance in the motion of his jaw. The sac was easily dissected out, the tooth removed and the cavity curetted, irrigated and

packed; and in about six months it had almost filled in with healthy tissue.

Case *11* is a print from a radiograph of a cyst caused by a chronic abscess of a devitalized cuspid tooth, upper jaw. A metalic filling was placed near the nerve chamber, causing the death of the tooth, and shortly after this a sinus formed in the alveolar process, and pus discharged. This persisted for several years, and when

Figure 10.

the x-ray was taken, there was a large area of necrotic bone, and a cavity found, which contained the apices of the lateral, cuspid and first bicuspid teeth. All these three teeth had become devitalized and had to be carefully treated, after which the three roots were amputated at their healthy bony attachment, and the cavity above thoroughly curetted, irrigated and packed, as the above bony cavities were treated. The wound healed completely in about two months.

Case 12 is a copy of a radiograph taken of a woman, 35 years old, who had an adamantinoma of the lower jaw in the region of the angle and molars. The woman gave a history of having had a

Figure 11.

first and second molar extracted about five years before this picture was taken. Her trouble commenced shortly after she had a lower plate made, which was directly after the teeth were extract-

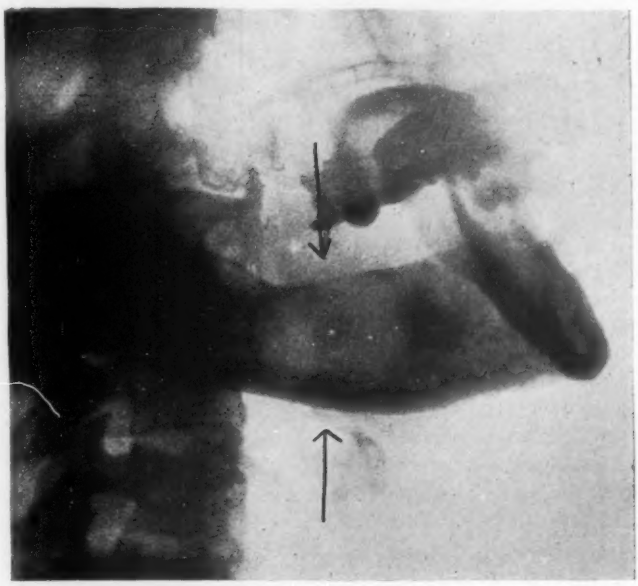

Figure 12.

ed. She noticed that, in a few months, the plate did not seem to fit, and hurt her by pressing too hard upon the tissues in the region of the molars. She had never had a third molar, and it was

thought that perhaps she was getting one on this side. The mucous membrane in the region of the molars was quite normal, but the tissues and the jaw itself were thickened considerably. This condition was operated upon, and the growth found to be quite tough, somewhat resembling a fibroma in consistency. It was thoroughly removed, the cavity packed and irrigated; and the growth has not recurred.

Pathological report was adamantinoma.

Case 13 shows radiograph taken of a dentigerous cyst of the upper jaw region of the canine fossa. This cyst occurred in a woman, 30 years old, who had never had a permanent canine tooth. There was a slight swelling over the bicuspid and a discharge of pus from a sinus at the neck of the first bicuspid. A probe could be passed for two inches up into a large bony cavity which included the antrum. X-ray showed a large cavity containing pus and an

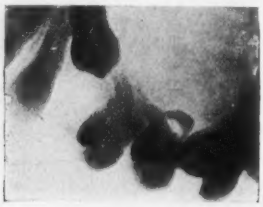

Figure 13.

unerupted canine tooth. This cyst was, of course, an infected cyst, but was draining freely and did not cause the patient any discomfort. The bicuspids were "dead" teeth and had to be removed when the cyst was opened and the cavity curetted. There was quite a thick, tough sac found, and the unerupted tooth was inside the sac. The cavity was thoroughly curetted, irrigated and packed daily with bismuth paste and gauze, and the wound filled up considerably in four months when I lost track of the patient. There was no discharge of pus through the nose on this side, and it was found that the lining membrane of the cyst covered over the middle meatus, and shut off the communication of the antrum with the nose.

Madison Avenue and Thirty-eighth Street.

(A) ANOTHER UNUSUAL LARYNGEAL TUMOR. SPECIMEN. (B) A CURIOUS ESOPHAGEAL EXPERIENCE. SKIAGRAPH AND FOREIGN BODY.*

DR. HUBERT ARROWSMITH, New York City.

(A) I present this tumor of the larynx as a companion to that shown here by T. R. Chamberlain at the October meeting. The patient was a man 45 years of age, an electric welder by occupa-

Figure 1. Epithelioma of the larynx. Natural size. Anterior view. Case of Elliott. Tracheotomy tube worn eighteen months. Note tracheotomy wound.

tion, who came to my clinic in December, 1910. About a year before, he had first noticed a hoarseness, which subsequently increased, and he had had "choking attacks" and increasing dyspnea and dysphagia for six months previous to admission.

*Read at the meeting of the New York Academy of Medicine, Section on Laryngology and Rhinology, December, 1913.

An immediate tracheotomy was done, and he was kept in the hospital for some time subsequently, for observation. As far as I could determine, the tumor seemed as large when I first examined him as it is now. He lived for eighteen months after the tracheotomy, working at his trade for almost a year of that time, and finally died from inanition from the closure of the esophagus by out-

Figure 2. Epithelioma of the larynx. Posterior view. Natural size. Note tracheotomy wound.

side pressure, due to the enormous surrounding glandular involvement, though the esophagus itself was not affected.

The tumor is an epithelioma completely obliterating the lumen of the larynx, with an enormous though curiously limited extrinsic involvement of the cartilages, so that the appearance of the larynx, as removed, suggests a large cyst. A point of interest is the appearance of the trachea which is uninvolved, and particularly the

tracheotomy wound which looks smooth enough to be a natural anatomical opening.

(B) The patient, a young woman, 18 years of age, employed as dressmaker, came to my clinic October 3, saying that two hours previously she had swallowed an open safety pin. The skiagraph showed the pin plainly—*point up*. That evening I attempted to remove it. I found it immediately, but had the bad judgment to demonstrate it, through the esophagoscope, to a dozen or more spectators. The patient came out from the influence of the anesthetic, and vomited profusely. I was forced to withdraw the esophagus, and on reintroducing it, could not find the pin. I assumed that it had gone into the stomach, but a radiograph of the abdomen, made next day, failed to reveal it; another of the esophagus, showed it reversed in position and somewhat lower down. Esophagoscopy immediately disclosed the coiled end, and it was extracted without the least difficulty.

The only solution that I can suggest for the reversal of the pin is the violent effort of vomiting.

178 Clinton Street.

Malignant Tumors of the Pharynx in Children. LUCIEN JEANNERET. *Revue hebd. de Laryngol,* April 18, 1914.

Primary malignant tumors of the pharynx in children are extremely rare. The tonsil is the most frequent site; then the palate and occasionally the walls of the pharynx. Sarcoma of incomplete maturity is the most frequent type. Alveolar sarcoma and rhabdomyosarcoma have been observed. Carcinoma is exceptional.

The case of congenital sarcoma reported demonstrated that a malignant tumor may originate in the pharynx independent of all irritations.

All malignant tumors of the pharynx in children have a very rapid evolution and the prognosis is extremely bad. As soon as they give rise to symptoms, surgical intervention is generally useless on account of the progress which the growth has made.

SCHEPPEGRELL.

BRONCHO-ESOPHAGOSCOPY.*

DR. E. W. CARPENTER, Greensville, S. C.

In the summer of 1912 I reported five cases of foreign bodies removed from the bronchi with one death due to the parents' delay in obtaining aid for an infant whose trachea presented sufficient inflammatory narrowing to prevent the introduction of the instrument by either a high or low operation. At the same time I presented one successful case of esophagoscopy.

Since then my share of similar work has amounted to eight cases. Before reporting them, let me say a few words: The majority of foreign bodies in the lungs cannot be expelled by the efforts of the patients and most often will cause death sooner or later; therefore, never procrastinate and wait for them to be coughed up. Do not accept all that children say about the nature of a foreign body, because fear or other reasons often prompt them to obscure the truth of the situation. Cough of a paroxysmal and spasmodic nature is always present in recent cases where foreign bodies have been introduced into the lungs. A chronic cough, which cannot be accounted for, should be submitted to bronchoscopy. Be very insistent in obtaining the minutest detail connected with the initial symptoms, and after exhausting all your resourcefulness, submit your patient to the x-ray. A good negative will sometimes show results different from those suggested by the case history.

Case 1: Infant, 14 months old, while playing at an open bureau-drawer, had severe choking spell. It was brought to my office within an hour, transferred to hospital and within three hours after the accident, investigation was begun. Bronchoscope introduced without difficulty and a hard, smooth, round, blue substance was exposed in the right bronchus, firmly wedged and immobile. Diagnosis of a small marble was made, and after working for an hour, my colleague, Dr. J. W. Jervey, who was in the building, was invited to see the case. We worked alternately for three hours, when he very deftly and skillfully succeeded in withdrawing a large bead. Recovery after right lobor pneumonia.

*Presented before the Southern Medical Society, Lexington, Ky., November, 1913.

Case 2: Infant, 2 years old, while playing with a mouth full of grains of corn, laughed and was seized with violent choking. I saw the case after two weeks, pneumonia present, infant desperately ill. Bronchoscope passed through the sub-glottic area with difficulty because of the presence of a subglottic infiltration, when respiration was immediately suspended, necessitating the withdrawal of the tube, after which it was impossible to reintroduce it. It could be passed between the cords and below them about one-third of an inch, but the subglottic mucosa presented a firm ring which prevented further progress. The trachea was opened, the instrument introduced, and a grain of corn discovered completely filling the right bronchus like a cork. It was extracted at the first attempt when a flood of pus deluged the lungs.

Because of the subglottic hyperplasia, it occurred to me to intubate the larynx and close the tracheal opening, believing this would give good ventilation, reduce the chances of sepsis, and overcome the subglottic hyperplasia early instead of running the risk of having to treat a tracheal stenosis later. While introducing an O'Dwyer tube, successful at first attempt but tight-fitting, respiration suddenly stopped and all attempts to re-establish it failed.

Case 3: Infant, 10 months old, brought to my office in stupid, relaxed, cyanotic state with very shallow breathing. History of choking spell an hour before while eating some corn-bread. As there was no time to transfer the child to the hospital, I at once introduced the bronchoscope in the prone position. Trachea and main bronchus were filled with thick mucus and numerous particles of corn-bread. After careful mopping, they were cleaned out and respiration became regular and deep; on removal of tube the baby sat up and cried and seemed perfectly comfortable.

Case 4: Child, 5½ years old. This was a second-hand case. Eight days after inhaling a coffee-bean another physician exposed the bean, but for some reason failed to remove it and abandoned the attempt. The child was brought to me two days after this attempt with the statement that the first operation was abandoned because it was necessary to do a low operation and the mother at that time withheld her consent to open the trachea, and that the parents had now consented to any measure deemed advisable and the physician who had conducted the first investigation was out of the city. Pulse, 130; respiration, 32; temperature, 102.5°; respiration noisy; grey cyanosis; tracheal tug; abdominal recession and inspiratory stridor; child in a critical condition. Instruments in-

troduced into trachea and liberated a flood of pus and blood. Under constant mopping both main bronchi were explored, also the right inferior lobe bronchus. At the end of the right main bronchus an area of bleeding and intumesence was encountered and passed with difficulty. As no foreign body appeared and the patient was in extremis, the search was discontinued after an hour's work. The child was put to bed, and in a short time was breathing easily, deep, and with much less noise than before the operation.

The subsequent behavior of this case suggests that this patient was being drowned by his own excretions, for after emptying the trachea and bronchi of the retained pus and blood respiration was easier, deeper and less labored than before. He passed through a broncho-pneumonia and a week later was in good condition. My failure to find the bean was due to the fact that it was probably in a swollen small bronchus or had ulcerated through the bronchial wall, and I was unable to locate the perforation.

Case 5: Mrs. W. H. H., aged 42 years. History. Nine years ago, while eating hurriedly, became choked on bolus of beef steak. Since then hurried eating of poorly masticated food frequently precipitated choking spells, which have lasted fifteen to twenty minutes, during which time nothing could be swallowed. Esophagoscope showed oval ulcer, of about 2 cm. in longest diameter, just below the lower border of cricoid cartilage on anterior esophageal wall; edges thick, center dark, red and bleeding easily. At this point the lumen of the esophagus was reduced considerably, a tube of 11 mm. diameter passing with difficulty.

She was given Hyd. Chl. Cor. grs. 1/16 t. i. d. in a glass of water to be taken in sips, and applications of nitrate silver grs. 100-Aq. ℥1 applied to the ulcer every third day. Near the end of the healing process bougies were used to dilate the stricture. During the treatment which occupied two months, the patient gained twenty pounds in weight and now eats meat freely, a thing she had not done in nine years.

Case 6: E. Hughes, 5½ years old, had severe diphtheria when 18 months of age. No serum administered; convalesence protracted. Since this illness he has never been able to swallow any solid food, and semi-solids are swallowed with difficulty. Has lived mainly on soup and milk. This was a very obstreperous and unruly child and a general anesthetic was necessary. The instrument entered the esophagus and passed easily to a point just above the sternal notch, where a perfectly normal mucous membrane stretched like a diaphragm across the lumen with a central opening about

1½ millimeters in diameter. With a dilating instrument this was stretched under direct guidance of vision to about 5 mm. in diameter. This was probably a congenital membrane.

Case 7: Hughes, 5 years old. For two weeks attacks of spasmodic coughing leading to cyanosis and syncope. After careful questioning it was brought out that two weeks previously he was found on the piazza steps in a stupid condition by his little sister. Her cries brought the mother, who thought he was just recovering from a fainting spell. On further questioning the child admitted that he had swallowed a piece of stick he had been holding in his mouth. When first seen by me his temperature was 101°; pulse, 130; breathing was quiet and the only clinical condition discovered by examination of chest was a general moderate moisture with reduced vesicular murmur over right middle lobe.

The child was so insistent that a piece of stick had "choked" him that I proceeded to use the bronchoscope without an x-ray negative. This proved to be an error because the offending body was a large lead bullet 32½ mm. by 30 mm. in circumference, which was located at the bottom of the left main bronchus after time lost in exploring the whole right tree. It was very difficult to grasp the bullet firmly enough to dislodge it, it disengaged itself several times, and was brought through the cords by exerting considerable force. Recovery without complications.

Case 8: Baby, 2 years old, was brought to my office within two hours after swallowing a safety-pin. It had no cough, but refused to swallow anything and was dribbling freely. My first procedure was to introduce my finger into the pharynx, then passed it over the laryngeal introitus and into the esophagus as far as possible when I encountered a hard substance.

Placing the baby in a winding sheet in the Johnston position, I passed a Jackson laryngoscope over the cricoid cartilage into the esophagus and on firm retraction of larynx exposed the shielded end of an open safety-pin, point to the right. It could not be withdrawn as the point engaged the soft tissues, but after pushing it down a short distance, I turned the point to the vertebra and then extracted it by direct force, the pin being a small one, the pointed-end yielded after engaging it in the body of a vertebra. It was 1 inch long and ¼ inch wide at hooded end. Recovery without complications.

Remarks: I believe that case 2 died from too forceful dilation of the subglottic area with a full-sized intubation tube for the age. Respiration ceased on the first introduction of the broncho-

scope in the swollen trachea in the early stages of the operation and had to be withdrawn immediately. In the future I shall be careful not to use force in entering the trachea. Killian has recently insisted that we have been using tubes of dangerously large diameter, and recommends a much smaller set for children than formerly used.

Anesthesia: To inspect the larynx none is ever necessary, no matter what the age of the patient. Morphin and atropin are of great assistance in exploring the bronchial tree but never give enough morphin to overcome the cough-reflex, for it is the "watch dog of the lungs." The upper end of the esophagus can always be exposed with a speculum even in obstreperous children by using a winding sheet, placing them flat on their backs and introducing the speculum between the cuspid and bicuspid teeth with the patient's head turned about 60 degrees away from the operator.

With the co-operation of an adult patient the whole trachea and esophagus can be inspected after an application of 4 per cent cocain to the pharynx and larynx. I am convinced that no attempt should be made to pass an instrument into the trachea of a vigorously resisting child. I have found atropin of much assistance in these cases as it lessens the bronchial secretions, thus expediting investigation; it prevents an immediate post-operative out-pouring of secretions into the trachea and bronchi. This complication has, I believe, caused the death of a few patients. Jackson has an excellent editorial on this subject: "Drowning of a patient in his own secretions," in THE LARYNGOSCOPE, December, 1911.

Case 3, reported in this paper was moribund when it reached my office, not because of the grains of corn-bread in its respiratory apparatus, but because of the abundance of mucus which it was unable to cough up and which was drowning it.

Case 4 is also an example of this kind. There was only a small area of consolidated lung-tissue, yet cyanosis was present because the respiratory tree was filled with pus, mucus and blood, thereby interfering with oxygenation. This patient would undoubtedly have died had not the abundance of fluid been removed.

A NEW TONSIL HEMOSTAT.

Dr. Arthur W. Watson, Philadelphia.

For a long time the writer has been of the opinion that very little pressure was necessary to control hemorrhage following tonsillectomy, and that it was not necessary to have such heavy and cumbersome instruments as those now in use for that purpose. The instrument here described and pictured was made with that idea in mind. It is a tonsil hemostat but not a tonsil clamp. It acts on both tonsil fossae at the same time by pressure from within only, thereby causing less pain to the patient and avoiding the danger of undue constriction of the tissues and consequent sloughing. The instrument is made very light and as simple as possible in construction. Being light it does not drag on the patient's mouth and the simple construction does not readily get out of order and is inexpensive. The blades are separated and pressure regulated by bringing the handles together, and they are retained in any position by the ratchet. As there is no lock, simply a pin, the handles can pass each other and thus the separation of the blades may be very wide, accommodating the instrument to adults as well as to children. The oval plates for pressure are roughened to prevent slipping of the gauze or cotton wrapping. This wrapping should be made large or small according to the size of the fossae to be compressed. The length of the instrument is five and three-quarters inches. This hemostat was originally devised more especially to be used immediately after completing the tonsil operation, in order to save the time that frequently is lost in controlling all hemorrhage before sending the patient from the operating table, a saving which is very appreciable when doing a number of such operations consecutively. Under these circumstances the patient may be removed from the table with the instrument in place and left in the care of a nurse, and the next operation proceeded with. After fifteen or twenty minutes the instrument may be removed. This hemostat, however, is just as useful for controlling hemorrhage which may come on later, and can be worn as long as any other hemostat. The instrument has now been in use, by the writer and others, for about six months and has proved its ease of adjustment, with no tendency to slip (which cannot be said of all the clamp hemostats), and its efficiency in the control of hemorrhage.

126 South Eighteenth Street.

UNIVERSAL SYRINGE FOR EAR, NOSE AND THROAT.

Dr. P. Schoonmaker, New York City.

This instrument meets all the requirements for cleansing treatment of the ear, nose and throat, and is the only instrument combining these qualities on the market.

It is made of hard and soft rubber and has no loose joints, cavities or rough places to retain infection. It is simple, durable, easily cleansed and sterilized, does not get out of order, and requires no additional means for its use.

The instrument consists of a firm, pear-shaped rubber bulb of six-ounce capacity, made of the best rubber. The small end is reenforced and fits closely to and is cemented to the neck of a hard rubber pipe. The pipe is five inches long and is bent to an angle of forty-five degrees. The proximal end of the pipe has a neck and shoulder for attachment to the bulb. The distal, or small end, is ground even to make a friction joint with the tips.

The tips are made to conform to the end of the pipe and are held firmly by the friction joint. There are five tips which are designated by letters.

The nasal tip (N) is of hard rubber, conical in shape, the end being contracted to conform to the nasal opening of an adult or child.

The ear tip (E) is made of soft rubber, is acorn in shape with a small tubular extension to introduce into the external aural canal, but will not reach the drum membrane. With this tip attached to the bulb, the physician or patient can thoroughly cleanse the external canal of the ear with a warm antiseptic or aseptic solution thrown into the ear by compressing the bulb filled with the fluid with sufficient force to cleanse the parts of secretions or foreign body, or to irrigate the ear in diseased conditions. The middle ear can be aspirated of secretions when there is a perforation of the drum membrane, or after a paracentesis. Where there is a small perforation, it should be enlarged to give free drainage. In aspirating the middle ear, the bulb should be compressed, and the ear tip pressed well into the canal and allowed to expand. If it does not, withdraw it a little allowing some air to enter the canal. The bulb expands with enough force to produce a vacuum in the canal and aspirate the secretions into the outer ear, but not into the

bulb; the next syringeful cleanses the canal of secretions and again aspirates the middle ear on allowing the bulb to expand. Cases with acute or chronic otitic discharge heal more quickly when this manner of treatment is carried out than with the usual routine method of cleansing, as it is assisting Nature's method of freeing the parts of irritating discharges without force enough to do damage to the ear. This instrument can safely be placed in the hands

of patients giving them instructions and showing them how to use it.

The throat tip (T) is an oval, spatula-shaped tube of hard rubber with expansion of the end and several large perforations. With this tip attached to the bulb a coarse spray can be thrown into the larynx. This tip can be used in children and adults when they are unable to gargle.

The post-nasal tip (PN) is a hard rubber tube with perforated end bent upward. With this the naso-pharynx can be thoroughly cleansed.

The Eustachian tip (EU) is of soft rubber, the distal end fits into the end of an Eustachian catheter, and is used with the bulb to inflate the middle ear, or aspirate mucus from the pharyngeal end of the tube. With this method one can estimate quite accurately the amount of pressure required to open the tube. This tip can also be used with proper canula to wash out any of the facial sinuses.

This instrument can be used as a Politzer bag or for pressure for the fistula test of the semicircular canal.

There is no other instrument on the market that combines all these qualities for cleansing treatment of ear, nose and throat.

Unless otherwise ordered, it is put up with the aural and nasal tips. Careful directions are furnished with each syringe. It is sold under the name of Schoonmaker's syringe for ear, nose and throat.

Manufactured and sold by the Euclid Rubber Company, 2345 Broadway, New York.

Broadway and Eighty-sixth Street.

Spasmodic Retraction of the Esophagus in a Child of Sixteen Months. LAROZIERE. *Revue hebd. de Laryngol.* March 28, 1914.

Spasmodic retraction of the esophagus is characterized by a constriction of the pharyngo-esophageal canal more or less prolonged. It is rarely idiopathetic and nearly always symtomatic of some general or local condition, sometimes being the only manifestation of a neurosis.

In the case reported the paroxysms had developed after the swallowing of a button by the little patient and, continuing for 25 days, had resulted in marked emaciation. Two radiographs were made without results and the esophagoscope failed to show a foreign body or ulceration, but the passage of the tube was followed by gradual improvement and a week later the symptoms had disappeared. The spasm had evidenly been produced by a foreign body and had persisted after its spontaneous expulsion. SCHEPPEGRELL.

TWO MODIFIED FORCEPS.

Dr. Emil Amberg, Detroit, Michigan.

1. A forceps (Model 5) to be used by the assistant in a mastoid operation, modified and somewhat different from the forceps published in the Transactions of the Michigan State Medical Society, 1899, and the one presented to the American Otological Society, 1913. This forceps is somewhat stronger and the branches are

Model V.

somewhat shorter (about one inch long) and stouter. The handles, 5½ inches long, allow the assistant to keep his hand out of the field of operation.

2. An ordinary knee forceps on a somewhat enlarged scale. (Model 6.) The handles are about 4½ inches and branches 4

Model VI.

inches long. The long handle allows a grip with the whole hand. and, at the same time, the hand does not obstruct the view. The cup-like endings in this particular instrument are for a special purpose, namely, to remove superfluous granulations in a wound after a radical mastoid operation, and otherwise irrelevant in as much as the general shape of the forceps is concerned.

270 Woodward Avenue.

THE DEAF

Their Education—Improvement of Conditions—Responsibilities and Participation of the Profession.

JOHN DUTTON WRIGHT, M. A.
DIRECTOR OF THE WRIGHT ORAL SCHOOL FOR THE DEAF
NEW YORK CITY

The aim of this department of THE LARYNGOSCOPE will be to bring to the notice of its readers from month to month, facts that may be helpful to physician and patient in dealing with the life-problems involved in deafness. Suggestions from readers will be gladly received and all questions answered to the best of our ability.

THE EDUCATIONAL NEEDS OF THE DEAF.

A concise summary of information for the guidance of physicians, in procuring for their deaf patients the requisite educational treatment supplementary to medical and surgical relief.

INTRODUCTION.

The physician cannot practice his profession and at the same time perform the functions of a teacher. But he has constantly thrust upon him the necessity of giving advice and guidance to his patients in educational matters. He needs, therefore, to have in his mind, or near at hand for ready reference, the information required to enable him to wisely and intelligently guide those who depend upon him for advice in matters not strictly a part of his professional function.

It will be the object of this series of four papers to supply, with as much brevity as possible, the requisite information. If the several papers are preserved and filed for reference when need arises, many an unhappy patient may be helped, and saved from irreparable error, or from loss of time and opportunity.

If request for suggestion and guidance is not made by the patient, the physician should, nevertheless, give it as part of his professional service, and in many cases it may prove the most valuable thing obtained by the visit to his office.

CLASSIFICATION.

For the purpose of ready reference let us first classify the patients that may present themselves, and then take up the educational requirements of the various classes in the order named.

Class 1. Children. A. Under school age. That is from birth to four and a half or five years of age in the case of otherwise normal child. B. Children and young people of school age. 1. Those with hearing slightly impaired from infancy. 2. Those with hearing seriously impaired from infancy. 3. Those totally deaf from infancy. 4. Those adventitiously partially deaf after speech has been acquired. 5. Those adventitiously totally deaf after speech had been acquired.

Class II. Adults. 1. Those with hearing but slightly impaired by conditions that will yield to treatment. 2. Those with hearing slightly but permanently impaired, with, or without, the probability of a progressive increase in deafness. 3. Those with hearing seriously and permanently impaired.

Perhaps, before taking up in detail these groups, it may be well to say a few general words as to the possibilities, educationally, open to the deaf. Every deaf adult, possessing moderately good sight, and an average alertness of mind, can learn to so supplement imperfect hearing by *training the* BRAIN to associate ideas with visual impressions as well as with auditory impressions, that much of the strain and inconvenience of impaired hearing will be removed.

Every deaf child, otherwise normal physically and mentally, can be taught to speak and to understand when spoken to, and can also be given as good an education by the speech-method, without the use of any form of manual communication, as if it were not deaf. This cannot be satisfactorily accomplished, however, when signs and manual alphabet are combined with training in speech, as is unfortunately done in very many public schools for the deaf in the United States.

While it is far better to begin the training in speech as early as the age of 5 years, nevertheless it is possible, where the pupil is anxious to learn, and will heartily co-operate with the teacher, to teach a person of good intellect to speak who has never spoken a word up to 18 or 20 years of age. I, myself, have done this, and know of instances where it has been accomplished by others.

Class I. Group A. Children under school age: Hearing-tests and treatment of little children of 2 or 3 years of age are usually rather unsatisfactory to the physician. The difficulties involved in making an accurate determination of hearing-power are very great with a little child that does not respond with certainty. Often there is no specific physical condition to be remedied. What shall the physician say to the parents when he has finished his examina-

tion, and has stated his specific findings? He could probably say something as follows:

The child is too young yet for anyone to be able to say definitely how much, or how little, it hears. Nor is it possible to state with certainty that it will not gradually outgrow the present condition; while, on the other hand, the condition may possibly grow worse rather than better. In the case of a child, even a slight impairment of hearing is a much more serious matter than a considerable impairment in an adult. Because even slight deafness in a child interferes with its proper acquisition of speech by imitation of the speech heard from others. It is necessary, therefore, to take every possible precaution to preserve, and to develop to the fullest degree, its sense of hearing. For this purpose great care should be taken to speak loudly and distinctly to the child, and near its ear. The mother, while holding it in her lap, should talk and sing to it; should show it pictures and talk about them; talk about the persons and things around it; at table take special care to teach it the names of the food and the table utensils; in short, throughout the day keep in mind that unless extra attention is paid to the child, its defective hearing will shut it out from acquiring language and speech at the proper time and in the ordinary way. If the child is evidently very deaf, then, in addition to the above directions, the parents should be told to be careful to have the child's gaze fixed upon their lips when they talk to it, in order that even in infancy it may acquire the habit of watching the lips, and so, gradually and unconsciously, learn to associate ideas with their movements, combined with such assistance as may be rendered by the ears. If there is a school for the deaf that the mother can visit where there are oral classes, it would be of value to her to make herself intelligent on the subject.

If the parents will closely follow this advice from the physician the child can be only the gainer. If, as time goes on, the impairment to hearing grows less, no harm has been done; probably the child's development has been hastened; while, on the other hand, if the deafness continues, or increases, then prompt action has been taken, and precious time, that would otherwise have been lost, has been conserved to the immense advantage of the child.

(To be continued.)

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, December 17, 1913.

WILLIAM W. CARTER, *Chairman.*

(Continued from page 232, March, 1914.)

In regard to the question of operating without anesthesia Dr. Cocks said that he would like to say a few words: Last year he was asked by the Visiting Committee of the N. Y. State Charities Aid Association to examine a series of school children who had been operated upon for tonsils and adenoids,—a certain number without anesthesia, and a certain number with anesthesia. Of the cases operated upon with general anesthesia, 73 per cent were satisfactorily done. The tonsils were completely removed, or only insignificant portions of tonsillar tissue remained. On the other hand, of the cases operated upon without general anesthesia, 90 per cent were badly done. These figures prove conclusively that adenoid and tonsil operations on children should only be performed with a general anesthetic.

DR. GUNTZER asked whether the Board of Health takes any notice of the small embedded tonsils with enlargement of the lymph nodes, as an indication for operation, and also whether they consider a persistent discharge from the ear as an indication for operation upon tonsils and adenoids.

DR. VOISLAWSKY asked where the Board of Health Stations were located and how many there were in the city. It was his experience that at the Hospital anywhere from six to a dozen slips were brought in every week, and it was impossible to accommodate all the cases that should be operated upon. That was not saying that all of the children who brought the slips required operation. So far as he could learn, in our general hospitals where tonsils and adenoids were removed, as many children are operated upon as can be accommodated.

The Doctor said that he did not believe that any of the members of the section were antagonistic to the Board of Health, but rather that they were grateful to Dr. Park and to the other members for what they were doing,—but it is feared that there are not sufficient stations and hospitals to accommodate the demand.

DR. COHN asked whether the children had a return slip given to them.

DR. CARTER said that the members of the Section were to be congratulated on having Dr. Baker present this matter before them in such a clear and concise manner. There was one matter to which he would like to refer which had been brought up in the discussion, but which was not strictly germane to the subject of the paper, and that was operations on adenoids and tonsils without an anesthetic; the statement that the enucleation operation is done time after time on children and adults

in three minutes without an anesthetic has been made. Dr. Carter felt that this statement was open to criticism; he wished also to remind the members that the Section has placed itself on record as being unreservedly opposed to the removal of adenoids and tonsils without an anesthetic by any method whatsoever.

DR. COFFIN asked Dr. Baker if she had ever seen a case in which tonsillectomy had been well done, which seemed to have been harmed on account of the consequent lack of tonsillar tissue.

DR. S. JOSEPHINE BAKER: I came here to-night not to criticise, but, if possible to defend the position that the Department of Health has taken in this matter. I seemed to me that the statement embodied in your resolution required explanation, particularly as a body like the Public Health Education Association had used your resolution as a basis for asking us to have the school inspectors state whether or not, in their opinion, a case of hypertrophied tonsils should be subject to operation.

I do not believe that the medical inspectors in the schools should give an opinion as to whether or not operation is advisable. The inspectors we get are from the Civil Service list, and, as a rule, are competent physicians. They should know whether or not tonsils are hypertrophied but, in the short examination made in the school, I do not believe they can obtain the necessary information to decide whether or not an operation should be performed.

In answer to the question as to whether or not I have seen injurious results from tonsil operations, I would say that I have never seen a case where the operation was properly performed where the child suffered any harm afterwards. The statement that only 20 per cent of the cases listed by the school inspectors as hypertrophied tonsils were operated upon shows, in my opinion, that we have too few operations rather than too many.

This brings up the question of hospital facilities, as the Bureau of Child Hygiene does not believe that operations in dispensaries are proper. I wish to repeat that in no inconsiderable number of cases where children have been operated upon in dispensaries there has been considerable hemorrhage requiring medical care at home.

Physical examinations of the school children are all made by physicians; the nurses never examine the children physically. In each case where anything wrong is found a slip is sent to the parents telling the nature of the disease. The department would like, in each instance, to have this slip endorsed by the doctor who is taking care of the child, and the department always accepts as evidence of treatment any statement from a physician to this effect. The decrease in the number of cases of hypertrophied tonsils in the last few years is due, in my opinion, largely to the care that these children have received. There is no doubt, however, that some of the reduction is due to improved diagnoses. The doctors that are working in the schools now are largely the same men who were working there four years ago, and while they are more careful, it is probable that a large number of cases that have been operated upon in the last four years must account, to a very large degree, for the reduction.

I feel very strongly in regard to the question of anesthesia for operations in these cases, and that is the reason that I believe we should

have more hospital facilities. Without anesthesia, there is a very serious result in the shock to the child and, in addition, the operation is very often poorly done. A very extreme case was brought to my attention not long ago. A laboring man came to me with his boy, and said: "My boy has been sent out of school with a slip stating that he has enlarged tonsils. This is the fourth time this has happened, and three times I have had his tonsils taken out." I asked him where, and he named three of the most important dispensaries in Manhattan. I asked him if they removed the tonsils without anesthesia and he said: "Yes, the boy was held down while the tonsils were removed, the boy struggling and crying violently during the process." Each year the boy had come home again from school after examination by the school doctor with the statement that his tonsils must be again removed. The man was perfectly willing to do everything necessary for his boy, but he thought he had met the requirements in having him operated upon three times. I looked at the boy's throat, and had never before seen a throat just like it. His tonsils were like bunches of fringe. I cannot imagine what had been done to him at each operation unless a small piece of the tonsil had been removed in a haphazard fashion, and that the struggles of the child discouraged the operator from completing the operation. The boy was referred to a hospital, operated upon under anesthesia, with satisfactory results.

I do not believe that the school inspectors should diagnose adenoids. After a child has been taught to blow its nose properly, breathing may then be tested and if it is still occluded, the child should be referred to its own physician for a more detailed diagnosis. The results of mouth-breathing are well known to you all, so that there can be no question as to the serious effect of neglect in these cases. As a rule the cause of this occlusion is the presence of adenoid growths.

In answer to the criticism of my statement about the difference of opinion in relation to diagnosis held by the various physicians who answered the inquiries of the Department of Health, I wish to state that each of these gentlemen received a personal letter and each one replied at length. I trust that my remarks have not been taken as criticism of these men individually. The point I wish to make is that a diagnosis which may be made in the office of a specialist in throat diseases, working under favorable conditions, is not always a feasible diagnosis for a medical inspector, working in a school, and having as his only implement a tongue-depressor.

The method we follow in determining the financial status of a child who is treated at the clinic is as follows: The school nurse first visits the home, finds out the income of the father or mother, how many wage-earners there are in the family, and how much rent is paid. In each case a similar investigation is made by the registrar of the clinic. We do not pretend to be more than human, and it is possible that errors are made and, occasionally, a child may be treated whose family could afford to pay, but there is no desire on the part of the department to have this happen, and if any one has knowledge of such a case we are more than glad to receive it and to investigate it at once. It is probably true that there are few other clinics in the city where investigation as to financial status of the family is more carefully and consist-

ently made. I should like to know, specifically, of any instance in the Borough or the Bronx or elsewhere where a child has been taken to a department clinic without having first been urged to consult its own physician. The families we come in contact with are always referred first to their family physician, second to the most convenient dispensary, and third, and as a last resort, to the Department of Health clinics.

During the last year about 58,000 children obtained treatment as a result of the work of medical school inspection. Of this number 52 per cent were treated by private physicians and tnese are all cases which would not have sought medical advice unless they had been referred by the department inspector.

The department's clinics for school children are located as follows:

BOROUGH OF MANHATTAN: 341 Pleasant avenue, 449 East 121st street, 164 Second avenue, Gouverneur Slip.

BOROUGH OF THE BRONX: 580 East 169th street.

BOROUGH OF RICHMOND: 689 Bay street, Stapleton.

BOROUGH OF BROOKLYN: 330 Throop avenue, 124 Lawrence street, 1249 Herkimer street.

Regular Meeting, January 28, 1914.

DR. J. HENRY GUENTZER, CHAIRMAN.

1. **Laryngeal Growth.** Presented by DR. WOLFF FREUDENTHAL.

The patient was a brick-layer by occupation, 67 years of age, who had suffered from pain in the throat since last May. He had been to different clinics and was examined several times. Finally a diagnosis of carcinoma of the larynx was made and he was referred by Dr. Harris for treatment with radium. Dr. Freudenthal said that he had another piece of tissue examined, and the report stated that it was malignant neoplasm.

When he first saw the patient there was an extensive growth reaching from the base of the tongue down into the right portion of the larynx. It was difficult to determine the size, but it looked to be as large as a thumb. It was treated with radium for periods varying from half an hour to two hours; then the mass began to break down, until instead of the former large mass there is a deep depression and the case resembles a broken-down gumma,—which it is not, but that is the effect of the radium in this case. Whether or not the condition can be cured cannot as yet be stated positively. Very few cases of real malignancy can be cured in spite of the optimistic newspaper-reports.

2. **Leontiasis Ossea with Marked Involvement of the Maxillary Sinus.** Presented by DR. WOLFF FREUDENTHAL.

The patient was a boy, 16 years of age, born in this country. He could not tell much about his history for he had lost his father and mother early. About nine years ago the mass in the neighborhood of the left antrum began to grow and has since increased slowly. There was no accompanying pain. When Dr. Freudenthal first saw the case, about half a year ago, he made a diagnosis of osteoma of the antrum. Careful examination of the patient showed also hard bony growths all over the body.

Since last year one has been noticed on the femur, which is growing. The hands were not quite normal and the bones of the skull were thickened all over. Many radiographs have been taken which show the condition quite clearly. The question of operation was considered, but it was decided not to attempt anything of the kind. The patient has been examined by a number of general surgeons and all agree that it is best to leave him alone. There is a possibility that the condition may have something to do with hereditary syphilis. This was suggested by Professor Virchow, who gave to the condition the name of leontiasis ossea. The Wassermann reaction is negative in this instance.

DISCUSSION.

DR. CARTER said that he personally had never seen one of these cases but had been consulted by a physician in Columbia, S. C., about one almost identical with the one shown to-night. In this instance, however, the patient was a girl, 12 years of age, in whom the osteomata began to develop when she was 7 years old. The first one made its appearance in the same position as in this case of Dr. Freudenthal's,—over the antrum, —next on the scapulae, humerii, the radius, and the femur on one side. The osteomata began as small enlargements of the bone, and increased to such an extent that the one on the femur has interfered with locomotion, as the child can scarcely walk on account of the severity of the pain due to pressure on the nerve. X-ray plates showed that these tumors were part of the bone from which they sprang; they were solid tumors. The child was an eight-months baby and the parents were perfectly healthy so far as could be learned. The child was fed on the bottle, but was strong and healthy up to 7 years of age. The physician was in doubt as to what should be done. He had given the child all sorts of treatment, mercury, the high-frequency current, electricity in various forms, and everything that he could think of, but the tumors continued to grow. Dr. Carter said that when he last heard from the case, last April, the tumor over the antrum had increased to such an extent that the cheek was protruding upward and the child could not open its eye fully.

DR. ABRAHAM, referring to the case of carcinoma of the larynx treated with radium, said that he had had two somewhat similar cases treated with radium but that he could not offer Dr. Freudenthal much encouragement, for in both instances the results were very poor. One of these was seen in consultation with Dr. Abbe. The radium was applied three times with absolutely no effect. In another instance Dr. Abbe himself had advised against the application of radium. Dr. Abraham said that he knew very little about the pathology of the condition in the other case, but would suggest a trial treatment with pituitary gland extract.

DR. HARMON SMITH, speaking of the resemblance of laryngeal carcinoma to syphilitic involvement following the application of radium, said that in a case of laryngeal cancer recently coming under his observation, following a thyrotomy for its removal, Dr. Freudenthal had twice applied radium and that the tissues had assumed an appearance remarkably similar to that of syphilis. In fact inspection of the larynx at the present moment would lead the observer to believe that it was a syphilitic involvement rather than cancerous.

DR. FREUDENTHAL inquired whether the case to which he referred was white or colored.

DR. CARTER replied that the child was white.

Dr. Freudenthal said, replying to Dr. Abraham, that the suggestion of pituitary gland treatment appealed to him, and he would try it. With regard to treatment of the larynx with radium, a few sessions of a half to three-quarters of an hour are not enough. Besides, it ought to be placed in the larynx and not nearby! In a few post-operative instances he has applied it for as long as twenty hours. He would be very glad to hear the outcome of the cases spoken of by Dr. Smith.

Plastic Operation for the Restoration of the Severed Vocal Cords on One Side Following Traumatic Self-inflicted Injury of the Throat. DR. HARMON SMITH.

This is a case of attempted suicide in which the patient used a razor in the right hand, cutting his throat from left to right transversely across the thyroid cartilage. The cut was deeper on the left side than on the right, involving the recurrent laryngeal nerve of that side and severing the thyroid cartilages transversely and from above downwards, at the same time cutting away from their anterior attachment the true and false cords of the left side. When the wound healed a permanent fistula in the cartilaginous box remained and the ends of the severed cords were left flapping in the air tract. The movement of the left side was unappreciable. To overcome the condition present the ordinary incision for thyrotomy was made, the detached cords stitched to the perichrondrium of the thyroid cartilage and the fistulous opening in the cartilaginous box closed. The accident occurred in November, 1912, and the operation in June, 1913. During the last three or four months the movement on that side of the larynx has been improving and from an unintelligible whisper the voice has increased to a husky but perfectly intelligible one. The movement of that side of the larynx demonstrates the fact that the recurrent laryngeal nerve has re-established some of its nerve function, although it is claimed by some neurologists that a severed nerve never regains its function.

Laryngo-pharyngeal Abscess. DR. F. WHITE.

August 21, 1913: bone lodged in patient's throat. Ordinary means used to dislodge it (dry bread, etc.). Consulted doctor and throat was washed out for about half an hour with no result. Went to a hospital for treatment but without result, then went to Manhattan Eye, Ear and Throat Hospital. Was treated by the house-surgeon without success. Next morning he returned to the first-mentioned hospital and had an x-ray picture made. Bone not located.

August 31: Returned to Dr. Harmon Smith's clinic at the Manhattan Eye, Ear and Throat Hospital for treatment and came under my care. Upon examination the throat showed all the signs of a very active inflammation. The details of the larynx could only with difficulty be made out. Patient could swallow fairly well, however. A careful examination by the indirect, and a superficial examination by the direct method revealed no foreign body. Advised him to come into the hospital for local treatment and for thorough examination by the direct method. This he

did not do. X-ray negative. On account of illness I did not see the patient for several weeks but he came to the clinic regularly.

September 5: During a hard spell of coughing the patient stated a piece of bone was dislodged from his throat and expectorated. He exhibited the specimen.

October 15: Returned to work as his throat apparently was progressing favorably, but in a few days had to give up on account of the severe pains in the back of the head. He was treated at a doctor's office but came back to the clinic and was taken into the hospital for a couple of days, and the swelling about the left arytenoid was incised and a small amount of pus allowed to escape. In a few days the swelling reappeared and gradually increased in size despite frequent incisions.

November 8: An external esophagotomy was performed by Dr. Macpherson and me, and the areas involved, namely the tissues about the left arytenoid cartilage, the beginning of the esophagus and posterior portion of the pharynx in relation to these structures were freely opened and drained. The temperature the next day was 101°, but dropped to 100 and remained so for about two weeks.

December 6: The patient was discharged from the hospital. He had a temperature of 99.4° for some time, but for the last couple of weeks it has been normal. On account of the severe pains in the back of the head and wishing to eliminate any deeper lesions, Dr. Geo. E. Brewer was called in consultation. He coincided with all that was being done. Patient is now free from pain, eats and sleeps well. Regained weight.

Pathological Reports: Wassermann reaction, negative (two occasions). Pus from abscess, streptococci. Specimen from throat, granulation tissue. More tuberculin test, negative.

DISCUSSION.

DR. HARMON SMITH said that he examined the patient when he first presented himself at his clinic and at that time there was a distinct abscess at about the pyriform fossa which was evacuating pus. The operative procedures which followed seemed at one time inefficient but as the condition has progressed the tumor has entirly disappeared, although the sequence of partial laryngeal paralysis is still in existence.

Dr. Smith said that this demonstrated to his mind that the paralysis was an infiltration paralysis rather than a nerve lesion *per se* and corroborated what Dr. Lynah had called attention to in cases of diphtheritic infiltration paralysis, and that while he had differed from Dr. Lynah relative to his view on the subject, he was now convinced that Dr. Lynah was probably right in the majority of his conclusions.

Specimen. Presented by DR. H. L. LYNAH.

The specimen was removed from a patient at the Kingston Avenue Hospital who suffered from laryngeal diphtheria. He had been intubated outside of the hospital by one of the house-surgeons who reported that he had found the patient in extremis when he reached the house and had immediately inserted a tube. Being anxious to learn the condition, Dr. Lynah examined him and found that the tube had been coughed out and had lodged in his naso-pharynx; he suddenly became cyanotic, and a hurried tracheotomy was performed, but pus was inspired into his larynx.

The man breathed for a few moments and then died. Dr. Lynah said that had he not been so over-anxious to examine the man by the direct method, he would have seen that the thyroid cartilage was displaced to the left; the trachea below the cricoid was also displaced.

The specimen is to be examined to find out whether the condition was of syphilitic or malignant origin. As far as could be learned the history showed that the man was sick for a week, but he had denied any specific history. The abscess was an old one and very foul smelling. Pathologically, it shows a fistula. The abscess cavity was lateral and extended behind so that an instrument could be passed in for about four inches. The case was an illustration of the fact that sometimes in being overzealous one may overlook the main point of a case.

DISCUSSION.

DR. CARTER said that he had examined very carefully the specimen presented by Dr. Lynah, with the view of possibly discovering the origin of the abscess, and thought that he had discovered a place on the inner wall of the esophagus where an injury of some kind had been produced. It would seem that the abscess in this case was produced by the lodgment of a foreign body at a point where the cricoid cartilage compresses the esophagus, which is the point where foreign bodies usually lodge. It was possibly produced by a bone or other foreign body becoming lodged in the throat and setting up an abscess. The appearance of the specimen does not seem to indicate a specific or malignant condition, but it looks like a case of pyogenic infection,—just an ordinary abscess originating in the interior of the esophagus and burrowing into the adjacent tissues.

Cleft Palate and Tumor of the Pharynx. DR. LINN EMERSON.

The patient was a little boy with a cleft of the hard and soft palate. An unusual feature of the case was that the child had also a large fibrous tumor in the vault of the pharynx which Dr. Emerson planned to remove with the adenoid tissue before repairing the cleft. Dr Emerson said that he had seen the turbinate bodies projecting into the pharynx, but never anything like this case before. The tumor has the appearance of a fibrous polypus. The palate itself slopes well and ought to come together very nicely. That will be attended to a few weeks later. The case first came under observation about two weeks ago.

Double Hare-lip. DR. LINN EMERSON.

Dr. Emerson said that this was one of the most pronounced cases he had ever seen. About seven months ago he had repaired the double hare-lip, a drawing of which he had made on the blackboard. The premaxilla stuck out horizontally leaving the mouth and nostrils to form one wide cavity, with the premaxilla sticking out like a horn. A V-shaped piece was cut out of the septum and the premaxilla was brought back into place. If this is taken out, as is sometimes done, it leaves a very pronounced depression of the upper lip in later life. From the method pursued this child has now a very good lip, and two teeth have come through in the premaxilla. That is the fault of taking out a piece from the septum, so that these teeth are inclined back into the mouth, but that is better than taking out the premaxilla. It was quite a problem where to get tissue to close the opening and there were a number of difficulties.

The child was marasmic and was nothing but skin and bones, and the day before that set for the operation it was taken sick with pneumonia and was ill for four to six weeks. Later, when it was about 7 months old, the operation was performed on the lip. Considering the horrible deformity that existed before, the result seems to be very good.

Fatal Case, Resulting from Morphin. DR. LINN EMERSON.

Dr. Emerson said that he felt that failures as well as successes should be reported, and told of a case on which he had operated two days before. This was a case in private practice, the child of a family of considerable means. He had operated very successfully on the lip about six months before. The cleft went forward, clear through the gum, and the maxilla had to be fractured in order to bring it together; this was accomplished satisfactorily and a very nice result obtained. Following this operation the case was treated in the usual manner, the most important feature being to keep the child as quiet as possible. For this purpose he has been in the habit of giving morphin in very small doses. The nurse was instructed to put one-fourth grain of morphin in one drachm of water, and to give the child two drops, or 1-120 of a grain every four hours. The child was operated upon about 4 o'clock Monday afternoon, and early Tuesday morning the nurse called up Dr. Emerson over the telephone and reported that the child had passed a very restless night and had cried all night, and that the mother was very insistent in demanding that the child ought to be kept quieter. Accordingly, he instructed the nurse to give another drop; in that way the child got 1-80 grain hypodermically.

On Tuesday the child had three doses, at 8, 12, and 4 o'clock. At noon it was reported doing very well, and had a temperature of 101°. At 6:30 in the evening, the nurse reported that the child had a temperature of 103°, but did not say that anything else was wrong; so Dr. Emerson said over the phone that he would call to see it after dinner. On reaching the hospital at 9 o'clock, (having stopped on the way to see another patient) the interne reported that he had been trying to reach him for an hour, as the child's condition seemed very precarious. This was the first intimation he had had that there was any cause for anxiety.

At that time the child had a temperature of 105°, the respirations were shallow, but not slow,—about 20. He told the parents that he thought the child had had too much opium, still its reflexes were not abolished, the pulse was strong and full, and the heart was 120, but the respirations were quite shallow. He gave the child 1-120 of a grain of strychnin, and instructed the interne not to over-stimulate the child so that it would be wide awake and crying in three or four hours, but to watch it very carefully and if it did not improve to give it more strychnin; and that he himself would return in a very short time. He then went to make another call, and when he returned the child was dead. The interne said that the nurse had reported that the child was failing rapidly, and before she could administer the hypodermic it was dead.

There is no doubt but that the child died of the effects of the opium. It was 11 months old, and had had one-fifteenth of a grain of morphin in thirty hours, the first dose being 1-120 of a grain, and the last three one-eightieth of a grain.

The autopsy was performed this morning. Dr. Freeman was of the opinion,—on account of the fever,—that the child had pneumonia. This proved not to be the case, but it seems quite certain that death was occasioned by opium poisoning. The child probably had an unusual idiosyncracy to opium, for much larger doses have been given frequently without any bad results.

DISCUSSION.

DR. CARTER congratulated Dr. Emerson on the excellent results obtained in the cleft palate case, and then told of a case of his own, a child, 9 months of age, who had been operated upon three times before he saw it. The child came from the west, and one of the men who had operated cut off the premaxillary bone. Dr. Emerson's case showed the advantage of preserving this bone. In his own case, it was impossible to approximate the two sides of the superior maxilla. However, he wired the two sides and brought them somewhat closer, but it was impossible to bring them together entirely. The lip was a difficult proposition; he had to dissect the upper lip way up from the superior maxillae on both sides in order to get enough tissue to make a lip. He then made strong traction by means of adhesive straps on both sides in order to approximate the edges and relieve the tension. But where the pre-maxillary bone is missing there is a depression. A recent report from the case indicates that the two sides of the superior maxillae have gradually been pulled together by the newly constructed upper lip, and that the deformity is much less than it was shortly after the operation.

DR. E. A. BOGUE said that he had not intended to take any part in the discussion but in view of what Dr. Carter had said he wisned to add a word in favor of Dr. G. V. I. Brown's method of putting on adhesive plaster strips when the pre-maxillary bone is projecting, and continuing that for some time. In that way Dr. Brown had been able to retract the entire inter-maxillary bone through pressure on the lips and cheeks and has avoided the necessity of destroying or injurying it. This is a matter of great importance to the patient, as the permanent upper incisor teeth are involved.

DR. EMERSON said that in the case he had reported the child had worn adhesive strips for three months without any appreciable effect in getting the pre-maxillary bone back into position. He had had to undermine it far back in order to bring the lip forward and get union.

DR. CARTER said that in the case to which he had referred the premaxillary bone had been removed before he saw the child. He hoped that Dr. Bogue had understood this.

Report of Three Cases of Foreign Bodies Removed from the Bronchus.

DR. SIDNEY YANKAUER.

1. Kernel of corn removed from the right stem bronchus: Dr. Yankauer showed the grain of corn, which had been inhaled by a child of 5 years, living in Paterson, N. J. The case was interesting because of the classic symptoms presented. The child became cyanotic directly after the accident, and this continued until the child was exhausted, when suddenly it gave a deep inspiration and the foreign body passed into the trachea and the cyanosis was relieved; this was followed by a paroxysmal and

spasmodic cough for twenty-four hours, during which time the foreign body which was now located in the trachea was moved up and down with respiration. At the end of this time, the foreign body was caught in the lower part of the right bronchus, the spasmodic cough ceased, and the child had an ordinary bronchial cough. Under general anesthesia there was no difficulty in passing the bronchoscope, but the subglottic space was markedly swollen and some difficulty was encountered in passing it. When this was overcome the kernel was removed without difficulty.

2. *Upholsterer's tack removed from the lower lobe branch of the right bronchus*: In this case the patient, a child 7½ years of age, inhaled a brass-headed upholsterer's tack. The patient was admitted to Mount Sinai Hospital on November 14, and was bronchoscoped on November 21 under general anesthesia, and the foreign body removed. The x-ray picture showed that the tack had become lodged low down in the lung, within an inch of the diaphragm, and on passing the bronchoscope into the right bronchus it was found that the tack had lodged in the lowest branch of the right bronchus, the point of the tack being upward, which prevented it from being expelled, as the point became lodged in the wall of the bronchus. The bronchial mucous membrane was swollen and the stem of the tack was surrounded by this swollen mucous membrane, so that it was difficult to see the shank of the tack, and only a very small part of the head could be seen. With cocain and adrenalin, the swollen tissues were reduced sufficiently to allow half of the tack to be seen, but no attempt to dislodge it succeeded, for it was firmly imbedded in the mucous membrane. Dr. Yankauer said that although he succeeded in passing a hook around the shank, he could not free it until he employed an instrument which he had devised some time ago for this purpose, as tacks of all kinds are particularly difficult to remove, for the head of a tack will be caught by the swollen mucous membrane and the point will become imbedded. He showed the instrument which he used, which consisted of a rod with a claw at one end, something like a carpenter's claw hammer. With this he demonstrated how he got the claw of the instrument over the shank of the tack, and then by pushing the instrument down and rotating it, was finally able to bring the point up. This procedure worked very well, but one difficulty was encountered. As soon as the point was lifted up the elasticity of the bronchial wall pulled on the head and snapped the point over against the opposite wall; it was not until after much manipulation that he was able to get the point of the tack inside of the bronchoscope, and then to lay hold of it with forceps.

Even then the difficulties were not ended, for the entire head was still surrounded by swollen mucous membrane, and was located in a small branch bronchus. After the tack was in the grasp of the forceps it was found impossible to dislodge it by traction but by repeated lateral movements, working it first against one side and then the other he finally succeeded in getting it out of the smaller bronchus and into the main bronchus, and then got it out without any further trouble.

Dr. Yankauer said that this was unquestionably the most difficult case with which he has ever had to deal. It presented very few symptoms of the presence of a foreign body and the child was not greatly inconvenienced by it. Two or three days after the operation it caught cold

and had bronchitis for twenty-four hours, but was soon out of bed and discharged.

3. Piece of bone removed from the middle lobe branch of the right bronchus: This was another case of especial interest and some very instructive x-ray plates were shown. The patient was a man, 45 years of age, who had had an alcoholic pharyngitis and a slight cough which troubled him from time to time. One day, while eating, he began to cough, and swallowed a number of pieces of chicken bone. He coughed a good deal after that, and some one suggested that he might have swallowed the chicken bones. He watched for them in his stools, and a couple of weeks afterwards found a number of the pieces. The cough, however, continued and finally got so bad that he could not sleep. He had chills and fever, and night sweats, and was a very sick man. He also had pain in the right side of his chest. He consulted an internist, Dr. George Mannheimer, who in turn consulted Dr. Yankauer and presented this proposition: Here is a patient who states that he swallowed a foreign body some five or six months ago but passed foreign bodies per rectum, but the cough continues and he has other symptoms indicating the presence of a lung abscess.

There was evidence of consolidation on one side with a good deal of expectoration, and Dr. Mannheimer suggested that he might have some of the pieces of bone in his lung. An x-ray picture was taken, and showed the shadow of the diaphragm continuous with the shadow of the abscess.

The patient was brought to Dr. Yankauer's office, and under local anesthesia the bronchoscope was passed into the right bronchus. The opening in the middle lobe was easily reached and just beyond the opening there was a considerable quantity of pus. Upon wiping this away more pus appeared, and eventually it was determined that there was a foreign body there. The moment this was touched there was a gush of pus which continued until the abscess-cavity emptied itself. It was a little difficult to get hold of the foreign body, but finally it was brought out through the bronchoscope. The abscess-cavity was completely emptied after the removal of the foreign body.

The patient's cough improved materially, he was able to sleep at night, and his expectoration during the day was very much less. He was not, however, satisfied. The bronchoscopy was done on November 8, and for two or three weeks he contined to cough. He expressed the opinion that he had more bone in his lungs and wanted another bronchoscopy. Accordingly, three weeks later a second bronchoscopy was performed, but nothing was found and it was determined that the bronchus was normal in size. After this, the patient continued to improve, and eventually the cough ceased altogether. On December 22, another x-ray picture was taken, and in this plate the shadow of the heart is normal and the edge of the diaphragm is visible all the way over, in the normal manner. The patient is now entirely well.

During the course of the operation the patient coughed up a large number of pieces of casts of the bronchial tube, which were preserved as they were rather interesting.

DISCUSSION.

DR. QUINLAN said that this very interesting series of cases reminded him of one he saw last fall. A physician consulted him regarding a patient from one of whose molar teeth a dentist had removed a large gold crown. The patient was convinced he had swallowed it, especially as he felt some discomfort at the junction of the left lower ribs at the diaphragm. He had no other subjective symptom, but stated that in the morning, when he brushed his teeth, he coughed slightly, with a stain of blood in his expectoration. The physician asked what he should do with the patient, who was convinced that he had swallowed the tooth cap and felt it in his chest.

Dr. Quinlan had him brought to St. Vincent's Hospital, where the radiographer made an x-ray plate and thought he detected the outline of the cap of the tooth, but on account of some peculiarity of the lower jaw the bronchoscope could not be employed. How to proceed was a question. It was decided to do a low tracheotomy, and an exploration was made, with radiographic exposure, the radiographer supplying information as to direction with a long Killian forceps. After a time the cap was removed, and with the exception of a slight emphysema the man had no further trouble. The case was interesting, as the ordinary procedures were negative, leaving nothing to be done but the rather unusual measures which were finally resorted to, namely, low tracheotomy and exploration through the bronchial tube on the involved side, guided by the radiographer.

Old Silver Tongue-depressor. DR. HURD.

Dr. Hurd presented to the Section a silver tongue-depressor formerly used by Dr. Sass, which had been made by Tiffany, and was presented to him by a patient. This depressor had come into the hands of Dr. E. J. Birmingham, through whose courtesy Dr. Hurd was enabled to make the presentation. It seemed to be of sufficient interest, at least from an artistic point of view, to add to the collection of early instruments already in the possession of the Section.

DR. GUENTZER, in the name of the Section, thanked Dr. Hurd for the interesting addition to the collection.

Urea and Quinin Hydrochlorid in Nose and Throat Surgery. DR. ARTHUR J. HERZIG.

Dr. Herzig said that he employs a 4 per cent solution made up with 1 per cent boracic acid, and injects ten minims into the anterior pillar of the fauces. He also applies a 50 per cent solution post-nasally to the adenoid space. He then waits ten to fifteen minutes before operating, and performs either a tonsillectomy or a tonsillotomy with the punch operation. The adenoids are removed as usual, with the curette only. There is some bleeding during the operation, but none five minutes after the operation is finished. He has operated on 390 cases of tonsils and adenoids, and has performed six uvula resections and four tonsillar cauterizations. The anesthesia in the pharynx lasts from two to eight days; the edema, from two to ten days. Then a membrane forms at the site of the infection. This disappears in from two to ten days.

In conclusion, he stated that he wished to emphasize the fact that the advantages of urea and quinin over cocain are that the former is non-

toxic and that the anesthesia of the pharynx lasts from two to eight days, preventing the soreness that always follows the use of cocain or general anesthesia. It also acts as a hemostatic, even in fibrous tonsils.

The disadvantages are those of any local anesthetic, in that the patient gets nervous from seeing the doctor, and also from the sight of blood and instruments.

DISCUSSION.

DR. FREUDENTHAL said that he had been especially interested in Dr. Herzig's paper, as he himself had written a paper on a similar subject some two years ago for the *Centralblatt fuer Laryngologie*, at the request of Professor Findler, of Berlin.

There is no question about the toxicity of cocain, although now-a-days very few cases of evil effects are reported from its use. Of course no one would dream of injecting a 10 per cent solution into the tonsils of a young child, as has happened in this city. Those accidents that do happen are usually due to a combination of adrenalin and cocain. He had demonstrated in a number of cases that the adrenalin was the cause of the death. The effects of adrenalin-poisoning are so characteristic that if once seen they can never be forgotten. If a large quantity is used the toxic effects are visible in half a minute,—extreme pallor of the face and the next minute the patient is gone.

Coming to the question of urea and quinin hydrochlorid, Dr. Freudenthal said that he had tried this method of anesthesia several years ago and some rather unpleasant occurrences resulted. They were not dangerous, but the edema was rather more than he liked to see and there was some sloughing of the parts which did not heal readily. Shurley, of Detroit, described similar occurrences; so he abandoned it but he had recently taken it up again and had used it very satisfactorily on some cases this summer. He is not yet, however, prepared to give a final opinion regarding it. It can be used to advantage in laryngeal and pharyngeal work where we have to use enormous quantities of cocain and where the toxic effect might be very great, and for these cases he would advise its employment.

DR. HARMON SMITH said that he had never employed this method of anesthesia and therefore the force of his remarks would be to that extent unimportant. He said that he would certainly never employ such anesthesia in children, but in adults, provided the sloughing and slow healing could be averted, he saw no reason why it should not be used, particularly if the good results claimed by the author would follow in the experience of all operators. As to the objectionable results from the use of adrenalin, spoken of by Dr. Freudenthal, he said that he would like to state that the evil results were due to cerebral anemia and that this could be obviated by having the patient in a reclining position at the time of the injection; that the danger of the dizziness and syncope were over in from five to ten minutes after the injection if the patient's head were placed sufficiently low to prevent the cerebral anemia.

Dr. Smith said that if the analgesia lasted for several days, as stated by Dr. Herzig, that it might be an economy of time as well as an advantage to the patient to inject him one day and have him return on some subsequent day for the operation. Moreover in view of these last-

ing effects of the anesthesia, in the removal of tonsils from adults or in cases of fibrous tonsil, it might be advisable to inject the solution to prevent pain subsequent to the operation.

DR. CARTER said that he did not wish to be considered ultra-conservative about matters pertaining to laryngology, but that he did not see the use of getting out another drug for anesthesia if we have one which is perfectly satisfactory. Objections have been made to cocain on the ground of its toxicity but he has used it in solutions of half of one per cent up to pure crystals and has not yet had a case in which he felt that the symptoms of the patient were due to cocain. Cocain-poisoning has been exploited to a degree that has reflected undue discredit on the drug. On several occasions he has had patients drop over before they have been touched by an instrument or by cocain, merely from the psychic effect of having an examination made. Such cases are not due to the drug, but to the dread of a possible operation. In poisoning by cocain, entirely different symptoms are presented, and he believes that the psychic disturbance is mistaken for true poisoning, which is rare. Several objections to urea and quinin hydrochlorid were admitted by the essayist,—the having to wait for ten or fifteen minutes for the anesthesia, and, on the other hand, that this lasts from six to eight days. Dr. Carter said that the only advantage he could see in such a prolonged anesthesia in operating on the nose and throat is that if one is not satisfied with the first operation and finds that something more has to be done he can do it several days afterward without re-anesthetizing the patient. We do not have edema with cocain and we do not have a false membrane. These objections should stand against the urea and quinin hydrochlorid.

In regard to the hemostatic qualities, everyone knows that cocain is hemostatic, that it contracts the blood-vessels and shrinks the mucous membranes.

Dr. Carter thinks that we should not adopt a drug for local anesthesia in nose and throat work that has no more points in its favor than were shown in the paper. Urea and quinin hydrochlorid is a useful drug, but its greatest usefulness is found in other fields of surgery, as shown by the work of Crile.

DR. YANKAUER said that some years before in a paper read before the Section he had called attention to a method of anesthetizing the tonsil which required a minimum of cocain; it consisted in injecting the nerve of the posterior palatine foramen with a single injection of 10 minims of a 1 per cent solution of cocain. In that way one can anesthetize the entire tonsillar area and can do a tonsillotomy without any pain whatever.

DR. MYLES, referring to the amount of pain experienced by the patient, said that he had heard it stated many times by distinguished physicians that it depended largely upon the power of moral suasion exercised by the surgeon.

Many years ago quinin was used hypodermically for malaria, and at that time some unfavorable results were reported, but the use of the drug was not so well understood then as now. The urea and quinin hydrochlorid certainly seems worthy of a trial. Dr. Myles said that he did not know how much attention the operators paid to the complaints of their patients after tonsillectomy, but he had known them to make the atmos-

phere blue for a week, complaining that they could not swallow and that they suffered pain all the time. There is often a great deal of distress, and he was in favor of using moderate solutions of this drug subsequent to the operation if experience proves the claims to be true. He is strongly inclined to do everything possible to prevent the patient from suffering pain both at the time of operation and afterward; and if the urea and quinin hydrochlorid can be used in this way without being followed by edema or sloughing it would be a great help in operations for tonsillectomy.

DR. HURD said that there was no doubt about the use of urea and quinin hydrochlorid as an anesthetic. An interesting theoretical point had been given to him by a Southern physician in relation to the quinin causing acute mania,—at times this can be relieved by morphin. The urea does not produce edema; it is not an exudation of serum but of fibrin, and that was proved soon after its discovery. It was found to be a fibrosis not an edema. Anything above 1 per cent will produce it; 1 per cent does not give a post-operative anesthesia. Four or ten per cent will give a fibrosis and post-operative anesthesia. How much that will interfere with tonsil operations depends on the amount of fibrosis in the pillars. It is an ideal anesthetic to run ahead in extensive operations about the neck, like glands of the neck as one need not be afraid of poisoning.

DR. GUENTZER inquired in regard to the quantity of solution used and the method of operation, and also whether during the period of convalescence there were any ear-symptoms.

DR. HERZIG said that he had never noticed any ear-symptoms. He uses the urea and quinin mixed with boric acid and injects 10 minims of a 4 per cent solution. The reason for the sloughing was brought out by Dr. Hurd. With stronger solutions than 4 per cent one will get sloughing. If a 4 per cent or less be used, there will not be sloughing. He himself has never had a case of sloughing.

In regard to the edema: This never travels downward. The urea and quinin hydrochlorid is actually a hemostatic and it is better than adrenalin. He has never had a post-operative hemorrhage.

It is the anesthesia of choice in adults. Dr. Herzig said that he never uses it for children. He had given a resume of his experiments with children, but only employs it with grown persons and older children; he also uses it to allay the soreness of which they complain and which often lasts for a week after ether or cocain. Patients do not suffer from soreness with urea and quinin.

The operation which he performs is tonsillectomy, sometimes with the snare, and sometimes with the tonsillotome and punch.

He also uses urea and quinin, four per cent injection with ether, injecting it when the patient is under the influence of the ether. It acts as a hemostatic.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Regular Meeting, January 20, 1914.

DR. E. B. GLEASON, *Chairman.*

Tubercular Growth of Septum. DR. E. MATLOCK.

Dr. E. Matlack presented a patient who consulted him on account of nasal obstruction and nose-bleed. He found several pale, tumor-like formations on both sides of the nasal septum, which bled readily on being touched. Microscopically their appearance suggested syphilis or a malignant growth, but a section removed for diagnostic purposes showed typical tubercular growths. Although symptoms have been present over a year, there has been very little damage to the general health.

SYMPOSIUM ON THE FRONTAL SINUS.

The Normal and Abnormal Frontal Sinus with Demonstration of Specimens. DR. F. M. STROUSE.

Frontal sinuses are never exactly alike in size or shape but often very nearly so. The septum, which may be considered a continuation of the nasal septum, is frequently deflected to one side or to the other and therefore very largely determines the size of the sinus. To outline the normal sinus, draw a curved line from one supra-orbital notch to the other, then a vertical line from the superior function of nasal bones to the top of the curved line. The frontal sinus is pyramidal in shape, base inferiorly located; has anterior, posterior and inferior walls. Anterior wall thicker but less compact than posterior, later separating sinus from frontal lobe. Interior is irregular; mucous membrane is thin and adherent, similar to lining of other accessory cavities, sparsely supplied with lymphatics. Venous anostomosis important on account of surgical pathology, communicating with ophthalmic, nasal, facial and cerebral veins. Normally the sinus communicates with the nose through its ostium into semi-lunar hiatus; frequently, owing to conformation of anterior group of ethmoid cells, an intermediate passage, ductus naso-frontalis, is formed or communication with nares may be by an indirect route through an anterior ethmoid cell. Occasionally the drainage is into the maxillary antrum. In probing the frontal sinus the surgeon must be constantly mindful of its peculiarities. Examination of anomalous specimens here exhibited is a convincing object-lesson of the frequency with which this condition is found. Almost every variety of abnormal sinus may be seen here, namely the abnormally small, the very large, those of remarkable inequality, sinus extending high on the vortex or laterally to the superior orbital process of the molar bone and again another extending into the lesser wing of the sphenoid. Again but one sinus is sometimes found, and in such a case there is but one ostium. Frequently we find partial septa and then again we note entire absence of the sinus, size and shape depending on position of

septum, intra-nasal pressure and over-reabsorption of bone. Dehiscences may be found in any or all walls including septum. Causes for these defects:—congenital, traumatic, senile and pathological changes.

Bullet Wound of the Frontal Sinus and Brain. DR. GEORGE W. MACKENZIE.

Male, age 47 years, was shot in the middle of the forehead at close range with a 32 caliber revolver, September 15, 1913. When seen by the writer a short time after its occurrence the patient was found to be conscious but rather uncommunicative.

Examination showed a rounded, depressed wound about one inch above the root of the nose and slightly to the right of the middle line. Neurologic examination was negative. The skiagraph showed the bullet located in the head about one and one-quarter inches deep. Inner wall of the sinus was splintered and depressed. Temperature 101.2°, pulse 88, respirations 26.

Operation: Under ether narcosis; horizontal incision, about 2½ inches long from the crest of one brow to the crest of the other through the soft parts and periosteum to the bone. A second incision extending from a point about the middle of the first incision, vertically upward, about 1½ inches long, making two right-angled flaps. Elevation of periosteum and soft tissue which exposed the wound and the bone about the wound for an area of 6 sq. cm. Close inspection of the wound showed a punched-out hole resembling a small trephined opening into which one could introduce the tip of the small finger. In the depths of the wound could be seen a disc-shaped fragment of loose bone. The external opening was enlarged with bone-cutting forceps to about the size of a quarter of a dollar. It was then attempted to remove the disc of bone, but without success, because its diameter exceeded that of the opening. The wound was still further enlarged to about the size of half a dollar, when the disc-shaped bone was removed without difficulty. Examination of this fragment showed that which corresponded to the external surface was about the size of a dime but the internal surface was beveled in such a way that it was equal in size to a quarter. Behind this fragment of bone could be seen the black, somewhat shiny appearing bullet which was at a lower level than the fragment of bone, somewhat nearer the ostium of the frontal sinus. (At about this time air bubbles and blood-tinged mucous were noticed coming up from the nose.) Several small, splintered fragments of bullet and bone were removed, after which the bullet mass was grasped and removed with but little difficulty. The side presenting inward was flattened considerably (mushroomed). The inner wall of the frontal sinus was found to be fractured and splinters presented inward towards the brain. Two, half-inch, long spicules of bone had penetrated the dura and were buried about half an inch in the brain substance. These were removed with a very slight loss of brain substance, if any. Wet iodoform gauze packed in the wound. Superficial dressing of plain gauze and bandage.

Recovery was uneventful, patient discharged November 23, 1913, with small depressed scar.

(To be continued.)